

The Australian COMMODORE and AMIGA REVIEW

Lombard Rally



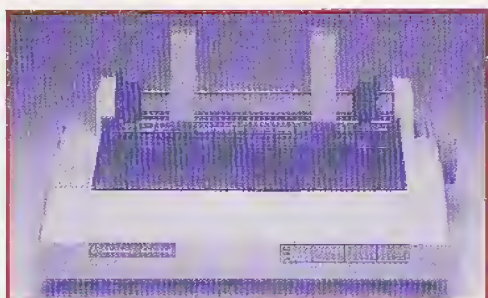
- Amiga system disks
- Amiga BASIC tutorial
- Amiga graphics and PAL

- C64 BASIC tutorial ●
- C64 number systems ●
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- Lightning Sort for the 128 ●

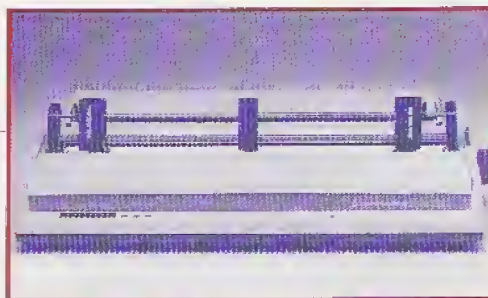
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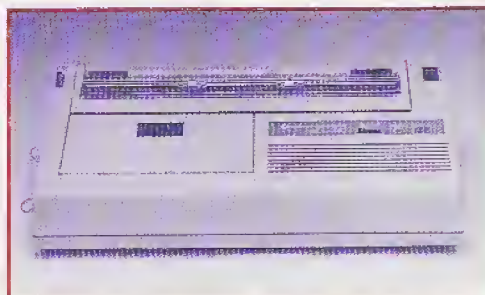
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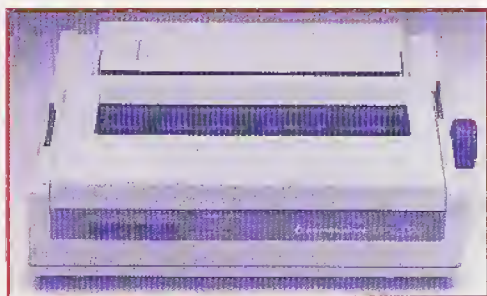
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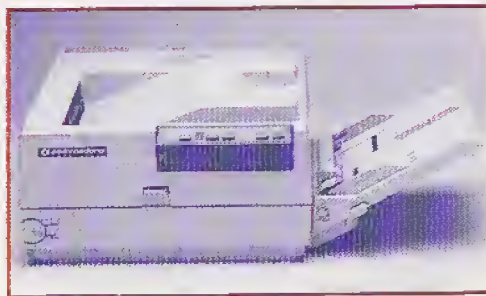
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Commodore MCS 810/820 Colour Series



Commodore MPS 2020 Dot Matrix Printer



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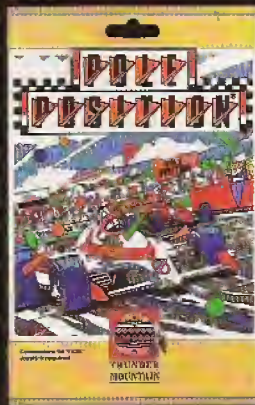
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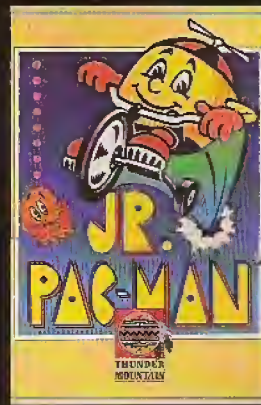
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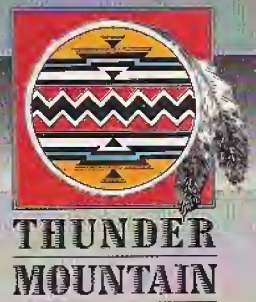
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The Australian COMMODORE and Amiga Review

VOL. 6 NO. 5

May 1989

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Australian Commodore Review
21 Darley Road, Randwick, NSW 2031
Phone: (02) 398 5111
Published by: Saturday Magazine Pty Ltd.
Editor: Andrew Farrell
Advertising: Ken Longshaw
(02) 398 5111 or (02) 817 2509

Production: Brenda Powell
Layout: Tristan Mason
Subscriptions & back issues:
Tristan Mason (02) 398 5111
Distribution: NETWORK
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Editorial

Clive Robinson, Newsworld cynic and Darren Hinch archrival, has bought himself an Amiga. Good for you, Clive.

It is not usual for me to talk to much about one product in this slot, but here I go, for the sake of breaking with tradition.

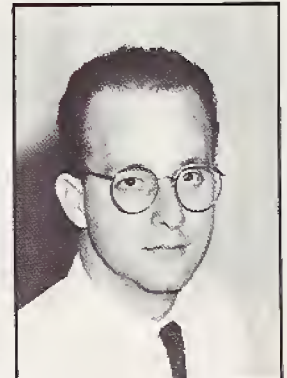
At the last hour of editorial production, a game called *Super Hang-On* arrived, for the Amiga. Here am I about to give it a big plug, and do you see one advertisement by the company who distributes the product in this month's issue? No. And not last month's issue either. Which should put to rest any claims of paid up reviews.

Yes, we do try to ensure we are reviewing products sold by our advertisers. But we never guarantee a good review. And we always look for amazing new gear from anyone. *Super Hang-On* is amazing. It is everything *Outrun* should and could have been. The animation is smooth. Game play is natural. Sound effects are realistic. The road, and hills, passing scenery and other bikes are all the sort of graphic quality the Amiga is famous for. Now when will someone do the same thing for cars? Anyhow, grab a copy of *Super Hang-On*, you'll love it!

My comments on the StarCursor joystick produced a flood of letters - all from people agreeing. Apparently the experience of our reader in the editorial concerned was not unique. Other computer stores have also refused to carry the stick because it is too good. To date, all comments on the StarCursor have been very positive. So, I stand well supported. You can buy one via mail-order if you're really stuck.

Other important news - Ami-Expo has been postponed. Keep reading Ram Rumbles for further information. A September date is possible, although the format may now be changed.

On a sad note, we say farewell to United Computers Sydney. They have closed their doors. Another major computer store in Melbourne has closed too.



Andrew Farrell

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Letter to the Editor of the Commodore and Amiga Review

Dear Andrew,

Following my appointment as Managing Director of Commodore, I am delighted to be able to liaise with the *Commodore and Amiga Review*.

Commodore Computers has a philosophy, high quality machines that represent excellent value for money. Once the machines are sold our involvement doesn't stop there, we need to support the publications that support the end user, so you can be assured of my support.

Dramatic product developments will forever be part of the computer industry and Commodore will remain at the forefront and I assure you, in turn, your readers will be kept up to date with all developments.

*Pat Byrne,
Managing Director,
Commodore.*



c64ers...

About the biggest news this month is the arrival of the new Action Replay cartridge.

First, an update on a few sales figures that show up some interesting trends. Sales of C64 games software for 1988 were up 9.4% over the year prior, however sales in all other categories were down. New games continue to arrive, but in smaller numbers here in Australia. It seems that developers are afraid to sink money into 8 bit machines.

Action Replay

Now, back to the Action Replay. I just had a chance to have a very quick look at the box prior to press time. Here's what's new:

The buttons are green and blue - a distinguishing sign perhaps. The manual has been rewritten completely, and there's a special offer inside for a graphic support disk. On the disk, which is only available from the U.K, you get all the essentials any good hacker would ever need.

The cartridge will now load most backups in six seconds - an amazing feat. (Where were cartridges like this in the early days?) Multi-stage programs may be copied, although multi-loaders still require an extra disk - also only available from the UK. You can modify text in a frozen game, grab sprites, graphics and print the result. A centronics driver is included for a parallel cable, which you can

get here in Australia, for Epson and other such printers. The machine code monitor accesses all 64K. All the changes are in the software contained on a ROM on the chip. The Action Replay V has a total of 32K ROM and 8K RAM. Both the 1571 and 1581 are supported in C64 mode. For further information call (02) 817-0011.

NO

Look out for a new game from France called *NO*, an adventure on three disks with 110 locations, animated graphics, pull down menus. For further information, Pactronics (02) 407 0261.

If you have something newsworthy to include in this column, please send it in to us! FAX it to (02) 398 5322 today.

RAM Rumbles



Commodore appoints new president

Irving Gould, Chairman and Chief Executive Officer of Commodore International Limited (NYSE:CBU) has announced that Mehdi Ali has been appointed to the position of President of the Company.

Mr Ali, a managing director of Dillon, Read & Co Inc, New York, has been a special advisor to Commodore for the past three years. In August he was elected to the Commodore Board of Directors.

Mr Gould commented: "Having worked closely with Mr Ali for the past three years, I believe we are fortunate that he has agreed to expand the role he has been playing in the restructuring of Commodore into a major competitor in the microcomputer industry."

Mr. Ali will conduct his duties as President from Commodore's New York Corporate offices. Mr. Ali has been with Dillon, Read since 1984, and served as vice president on the finance staff of PepsiCo Inc. and General Motors Corporation for the previous eight years.

Vapourware materialises!

Vaporsoft Inc., has released *Nerd Perfect*, the ultimate in vapourware. Consisting of a manual and a disk - just the shell, no media, *Nerd Perfect* is described as using WYGIWYG (What You Got Is What You Get) technology.

For the first time a title that is 100% compatible with all computers! The manual is written with tongue firmly in cheek, and with a retail price of \$9.95 (US), the whole thing would be a perfect

gift for your favourite computer geek. VaporSoft Inc., 300 N. Main St., Suite 15, Fallbrook CA 92028, 619-723-5505.

CD

Now there's a game soundtrack CD available from Jim Cuomo. Game play offers musical selections from your favourite computer games, such as *Defender of the Crown*, *SDI*, *Zombie*, and *Sinbad*. It's available for \$15.00 (US) from Pigeon Music, 11684 Ventura Blvd., Ste. 520, Studio City, CA 91604, 818-505-1077.

Real 3D

Texas Instruments has come up with a new 3D computer graphics display that is laser-based, but doesn't rely on holography. In fact, it's mechanical! A computer-controlled laser beam scans a rotating disk, creating a real image (rather than a virtual image) which is fully viewable from any angle. Prototypes use a single laser, but multiple beams could be used to increase resolution or add colour to what is now a monochrome display.

The display volume is adjustable, and is easily adaptable to different materials and configurations. Conceptual drawings already depict a large, dome shaped display "tank" for air traffic control, and TI talks about the possibility of using solid lucite cylinders for better mechanical stability.

Initial installations are expected to be in high-end applications like air traffic control and military tactical battle display systems, but the technology should eventually filter down to micros. □

Update



As you are reading this, I am probably winging my way back from America, England and France, bringing with me, I am sure, many new and exciting products, among them the new Amiga scanners. We already have samples of two of those Scanners which are absolutely brilliant and they come with optical character recognition software of a quality I had not seen before.

For the Commodore 64 owners, I am very pleased to announce our new BUDGET SAVER range which will expand greatly over the next few months. Meanwhile, we are beginning with some games which are going to be packaged with another game shrinkwrapped. This other game is free but is not one of those made-up disks that are very often put in as "freebies" but is a fully packaged product, and as a further opening offer and incentive, anyone of you who buys three of these budget saver games and sends in the flattened boxes of the free games with your name and address, we will send you out a further game for your Commodore 64.

Still on the subject of games for the Commodore 64, we have just received stock of a new game from France called "NO", which is one you really must look for in your local retailer. This is a brilliant adventure on three disks with 110 locations; animated graphics, pull down menus, etc.

For the Amiga owner, we have two new games CUSTODIAN and NETHERWORLD. The former is one of those brilliant games involving aliens, teleports, energy quotients and is graphically superior, whilst NETHERWORLD takes you into a fantastic new world of strange and wonderful beings and structures - watch out for the goats head that spits acid blood, the demons and the alien eggs - graphics would have to be seen to be believed.

For PC owners, the good news is that LOMBARD RALLY is only two weeks away, but have you tried TURBO CUP with the give-away Porsche (model, of course).

Finally, a thank you to all of those who came to see us at GB's Expo in Broadway but for those of you who did not, you would also have missed the new FUN SCHOOL 2, now available for the Commodore and Amiga. These educational programs come in 3 volumes for the following age groups 2-6, 6-8, 8+.

SYWIGB

Notepad

Notepad

News from the USA by Peter Ward

New DTP package

One of the most significant software releases in March in the USA was *Pagestream*, previously marketed as *Publishing Partner Professional* by *Soft-logic*. This all encompassing desktop publishing program for the Amiga features a comprehensive word processor, complete with spelling checker and auto-hyphenation, scalable fonts in the true sense.

Included are ten different typefaces, some of which are up to 200 points! Also text search and replace options, automatic page numbering, justification by word or character and a function to make text lowercase or uppercase.

Layout tools include: style sheets, the ability to run text around irregular shaped graphics, user definable macros and view magnification scale, a variable display zoom, a "snap to grid or guides" function and being able to display facing pages, which along with extensive keyboard equivalent/hotkeys make the design process extremely efficient.

The program also boasts the ability to manipulate graphic objects through slants, twists and rotations.

All this power is complemented by printer drivers which support 300 dpi resolution now commonly available on 24 pin dot matrix printers as well as Postscript support and the ability to do colour separations. The RRP is a sen-

sible US\$199 (discounting has made US\$129 typical).

ProDraw/DPaint III

Darrin Ross of Creative Computers in Los Angeles was kind enough to demonstrate *ProDraw* by Gold Disk. This structured drawing program is yet another package capable of obtaining superb results on dot matrix printers.

Darrin and I quickly ran through the main program features, drawing tools included ellipse, rectangle, pen, freehand grid and text, with a notable function of being the ability to import an IFF picture which can then be traced over. We dumped the "Escher type Hands" picture used to advertise *ProDraw* to a postscript laser printer.

The resolution of the final copy was remarkable. While in the store I noted that *DPaint III* was not yet released nor *Photon Paint 2.0*. I telephoned Microillusions about getting a 2.0 upgrade for *Photon Paint*, and was informed that "foreign" registered owners would be contacted by mail "real soon now".

Genlock

VidTech International have released their "Scanlock system" a broadcast quality genlock, and also have released a model which supports both PAL and Super-VHS PAL format for the "international market". The genlock is capable of connect-

ing multiple monitors and has dual fade controls for both the video and Amiga signals.

The system allows signal switching from PAL, S-VHS and RGB formats by the touch of a button, and the really nice feature is the RRP of \$US1095 for the PAL version. While on the subject of video, Sunrize Industries have released their "Color Splitter", an elegant device which separates composite video into RGB components.

This device makes it possible to save an IFF file, via a Digi-view type digitizer, of colour pictures from Handicams and still frame VCR's. RRP is US\$99.95 and with some luck a PAL version may be released "real soon now".

At a recent Comdex show Commodore had been demonstrating a new graphics card, which boasts 1024 x 800 resolution and a palette of over 16 million colours, of which 256 can be displayed at any one time. No details on availability and price have been released, and rumours of an Amiga 3000 have been spreading again with a late 1989 launch being mooted.

Lastly Expansion Technologies have released their "Toolbox" series of expansion modules for A500/1000 owners. This device allows for A2000 specific cards to be connected to the A500 or A1000 by simply plugging the card into an expansion chassis. The "Toolbox" is externally powered and most models will sell for under US\$200.

DPaint III PAL not released yet

Contrary to popular sentiment, the version of *Deluxe-Paint III* from Electronic Arts that is currently available is not fully PAL compatible.

This version does not have problems on Amigas in the USA, but is not fully compatible with Australian Amigas. The NTSC version of *DPaint III* cannot do PAL animations and has problems (trans. gurus) in low memory situations on PAL Amigas. Why get an animation program if it cannot do PAL animations? Although *DPaint III* is presently available in some retailers, the best idea is to hold off purchasing *Deluxe-Paint III* until the PAL version is available.

Another reason for holding off on purchasing *DPaint III* is that ECP Pty Ltd, the authorised distributors of Electronic Arts products, does not plan to upgrade users of the NTSC version to the PAL version.

The PAL version of the program is being tested at Electronic Arts Ltd in the United Kingdom and should be available in May. It will be distributed by ECP Pty Ltd, the present distributors of the other *Deluxe* products from Electronic Arts.

MicroMEG A500 RAM expansion

Diskworks/M.A.S.T have decided to storm ahead yet another step in the memory market, with the release of an internal 512K RAM expansion unit for the A500. The board is based on the MiniMEGS which has been very successful.

The expansion unit uncludes a clock and used the high tech 1Mb DRAMS, as in the MiniMEG. At half the size of the Commodore alternative, the board has potential for even more!

MicroMEG will hit the market this month for around \$249. A full 12 month warran-

Notepad

HP Deskjet

HP's DeskJet printer is the first 300 DPI ink-jet printer for under \$1000 (US). That means it should land here for under \$2000' making it cheaper than any other similar machine. The quality of output from this printer is almost as good as laser output - sometimes equally as good. The only detail that gives it away are the gray fills used in very high resolution graphics applications.

However, when it comes to speed, the DeskJet slips behind. It can take as long as half an hour (estimated time) to print out a page of text and graphics at 300 DPI, although a page of straight text only takes about a minute.

As the DeskJet prints at 120 CPS in letter quality mode, and about 240 CPS in draft mode, this makes it much faster than dot matrix printers. The quality of dot matrix output doesn't even compare as the DeskJet definitely produces letter quality output, not just "near letter

quality". Local distributors - how about checking this one out?

G'day, mate

George Baily has devised a quick tour of Australia for your Amiga, the *Geo Graphic Database*. By using The Director from The Right Answers Group, he has come up with a shareware (\$15 US required) interactive map of Down Under. 6474 Highway 11, DeLeon Springs, FL 32028. We'll try to grab a copy for our PD collection.

Disney envy

Gold Disk's new animation package, *MovieSetter*, was demoed at World of Commodore in Philadelphia. The animations it produced were in the Disney style, and the user interface for creating them is very easy to use. The demos are far better than you see on Saturday morning cartoon shows and should soon show up in some spectacular new animated films. RRP in Australia is \$99.00, now available.

Flipping pages

PageFlipper Plus F/X is an animation package that supports resolutions from 320 x 200 to 640 x 400 in overscan, HAM and halfbrite modes. It features a context sensitive script editor for easy alterations.

FX? Yes, this part of the title comes from the variety of wipes and fades included, and the ability for you to create your own transitions. Also able to read ANIM format files and comes with a stand-alone player program. \$159.95 (US) from Mindware Intl., 110 Dunlop St., W., Box 22158, Barrie, ON L4M 5R3, Canada, 705-737- 5998.

Data munching

Abacus and Data Becker have produced a relational database called *Professional Data Retrieve*. All the expected data management functions are here, along with a couple of surprises, including a programming language for sophisticated applications. Programs written using this can also be compiled to increase the speed of many operations. It is possible to edit up to eight files at the same time, and even the menus are programmable. Packtronics (02) 407 0261 RRP \$A299.00.

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LETTERS

TO THE EDITOR

Double standards?

Congratulations on your editorial stand against the prolific amount of pornographic material starting to appear in various software and bulletin boards. I couldn't agree more.

Why, however, do I find an advertisement on page 43 of the same issue advertising *Amiga HOT-DISK*, enticing me with features like "Hot (digitised, I assume) girl of the month", "Hot Fiction", "Hot Hot Icons (the mind boggles)" and an adventure which challenges me to see what I can do on a date with fifty bucks, a bunch of flowers, and a pair of X-ray specs?

Although the ad states that recipients must be 18 or over, there is no attempt to verify this, and besides - that's not the issue! If you really believe in what you write in your editorial, how about monitoring more carefully what comes after it.

*Philip Manwaring
Toowoomba, Qld*

Ed - Advertisers buy space - what they put in it is their business. Providing it is not false or illegal, the onus is on them to make sure it's moral and ethical.

C128 upgrades

Congratulations on a great magazine. I'm not a subscriber but have been buying the magazine since Issue I, and haven't been disappointed.

I was wondering if you could answer a question for me.

I rang what I think is our only local Commodore agent besides Kmart, and they informed me that

Commodore are no longer manufacturing the 64. I find this hard to believe but stranger things have happened. Hope you can clear this up for me.

Also I have a MPS 1200 printer (which I bought after reading your review ages ago). If I eventually upgrade to an Amiga 500 can I use my printer, and if I can what will I need to hook it up to the Amiga?

*Leanne Hood
Deeragoun, Qld.*

Ed - 64s are still rolling off the production line, but new peripherals and software are less numerous.

The product to hook up your printer to an Amiga would be any of the C64 emulators or better still Access 64, which you may have to order from Overseas.

Dragon's Lair too hard?

I am a subscriber to your interesting, informative magazine.

In the March issue in your Entertainment Roundup you seemed quite ecstatic re the arrival of *Dragon's Lair* for the Amiga.

I purchased a copy a week ago and would like to say that it is the most disappointing game I have ever bought. Of the six disks supplied I can only manage to get a brief peck at the beginning of disk 1. The instructions are inadequate (obviously) to get the game rolling.

After many, many efforts to get Dirk out of the hole and across the drawbridge frustration sets in.

The joystick and keypad operation have no control over Dirk in this phase; fire button sort of works

to draw the sword, but in each of the lives used all that happens is one is awarded 200 points per life, then back again to the beginning. How tedious and monotonous.

I cannot understand what all the fuss is about with this game and I'll bet there will be many other frustrated buyers having the same difficulties.

*Marian J. Winser
Kenthurst, NSW.*

Ed - It's a tough game that is very sensitive to wrong moves. I agree it can be frustrating - but the animation is ace. Persevere - watch the demo - or read next month's issue for hot tips!

Computer animation works!

After lengthy debate of the pros and cons of buying "a games machine", "a computer just too slow for business purposes", the enthusiasm of local Amiga users - including some of our members - prevailed: Canberra Youth Theatre Company purchased its Amiga 2000 last July (and began subscribing to your excellent magazine).

Coincidentally we were looking around for a new idea for television advertising when we read your article on a new computer graphics company located here in Canberra. A staff meeting and a phone call later, we were discussing our hopes and dreams with David Boddy (Amiga Pilot) and Emmanuel Stephanou (Group Captain of Ledgers).

Emmanuel Stephanou and Associates (with five Amigas) digitised a cartoon which we had just released,

animated the characters, and we recorded the soundtrack.

Any new idea comes with a mixture of hopes, risks, bewildering doubts. Our 30 second graphics TV advertisement was to sweep our doubts away as our 1989 enrolment surged by 23%. It's hard to argue with success.

*J.A. Beaton
Administrator
Canberra Youth Theatre
Co, ACT.*

Ed - Need we say more! Well done, Emannuel!

Computer violence

I would just like to thank you for the Editorial in February's edition.

It has been a concern of mine for quite some time that the amount of violence we are feeding our brains through TV, video and games is not doing us any good. Indeed, I feel that such viewing could ultimately affect a person's values, "desensitising him toward the value of life", to use the Editor's own words. It's time that those responsible took a good hard look at what they're doing to this generation of kids. I am not advocating total censorship, just a more responsible attitude from those who distribute games, videos and the other material depicting sex and violence. Having said that, I'm glad to see that *AC&AR* is a magazine with a conscience. Keep up the good work!

*Bill Stolk,
Parkville, Vic.*

Write Stuff?

I recently came across your June 88 issue with the review of *The Write Stuff*. As I have a Commodore MPS 1000 printer but have limited experience with the printer, *TWS* seemed like the perfect program.

I telephoned the number as list-

ed in your editorial section, only to find out that the South Aussie Comp User Group Inc no longer are listed at that number. Could you please tell me if there is anywhere I can write to get a copy of *TWS*, or a contact number?

If *TWS* is now unavailable could you please tell me of another printer program, with similar features with value for money.

*G.C. Gray,
Wild Dog Valley,
Via Leongatha, Vic.*

Ed - We have no new contact number. Can anyone help? Advertisements for this product appear in US magazines if you are really stuck.

Beefing up your Amiga

Thank you for your advice concerning the 16mhz Accelerator board for the Amiga 2000. I took the punt and ordered this board from MicroComputer Spot as per the ad in the latest *ACAR* magazine and subsequently the product arrived a few days later.

The first thing I noticed was a warning on the side of the box stating "Installation of processor by unauthorised persons may void your warranty", even before opening the box I felt slightly apprehensive at the prospect of what I would find.

Well, everything was alright, no board to slot in or should I say to belt in with a sledgehammer. All that was required was to remove the MC68000 CPU and plug in this nicely built daughter-board (only one jumper wire was visible on the reverse side of the board).

After a couple of minutes the board was installed after reading the small but completely comprehensive manual and power was applied . . . all went well, I inserted the disk which came with the board and clicked on the icon which proved the presence of the accelerator pro-

cessor . . . yes, it did exist and it was running at 14mhz! If you click this icon a second time you revert back to the standard 7.16mhz and so on. Next I ran the benchmark program and timed the difference between the two speeds, my results showed an increase speed of exactly 26.5%. The manual mentioned the figure of 50% speed increase with math intensive functions (which can mean anything!).

By the way, this accelerator board sports the 16mhz version of the MC68000 CPU along with five PAL chips and assorted resistors etc. A big plus is the facility to instal the MC68881 Math Co-processor and the necessary 16mhz crystal oscillator. Well, not being one to rest on my minor success, I immediately ordered the MC68881 and crystal from Parcom Electronics (authorised Commodore repairers) in Brisbane at a cost of slightly less than \$300 and am at present waiting for them to arrive. According to the manual an increase speed of tenfold is expected, so I suppose if I get half that, it will be still worthwhile.

I tried some games out with the 14mhz running, namely *Chessmaster 2000*, *Defender of the Crown* and *Mean 18 Golf*, all seem to run perfectly with a slightly noticeable increase in performance, but certainly nothing to rave about. I am hoping that with the Co-processor chip installed skid marks on the mouse mat will result.

So there you have it, for \$402 plus an extra \$300 you get a pretty zippy machine, now I can't get a cup of tea waiting for *Professional Page* to refresh itself after one page of typesetting.

By the way, this board is also available for the Amiga 500/1000 from Creative Microsystems of Portland, Oregon, USA.

*Sandy Campbell,
Murwillumbah, NSW*

Entertainment Roundup

by Andrew Farrell

Amiga software is really improving. Games like *Super Hang-On* are proving the earlier car racing programs - even the likes of *Outrun* - could easily be outdone. I believe there's still room for improvement.

C64ers may find fewer new games over coming months - but we plan to keep you as up to date as possible on what's around.

There is a new game from France called *No* for the Commodore 64, an adventure on three disks with 110 locations, animated graphics, pull down menus - from Pactronics (02) 407 0261.

Pactronics are also releasing a new Budget Saver range for the Commodore 64, where you get an extra free game packaged with the one you buy, then if you buy three and send in the boxes you get yet *another* free game. Sounds like a good idea!

Here's some information on new games just released:-

The Kristal

This is an epic arcade and adventure game for the Amiga from Addictive. The quest for the mysterious Kristal of Konos includes strategy, sword-fights, and space shoot-em-ups, pirates and princesses, in a far-away fantasy universe.

This looks like a really hot one! Full review next issue. From YPA Holdings, (02) 899 2277.



Prison

Far into the future, the Galactic Federation is using an abandoned planet as a

penal dumping ground for their undesirables. A dead planet shrouded in dank clouds, *Altrax*, is entirely closed to the outside universe.

The only way in is teleportation, the only way out is death for those for whom capital punishment is too light a sentence.

Jag Edwards is an undercover federation policeman wrongly convicted of a crime he did not commit and teleported to *Altrax* for life.

He learns of a pleasure craft which crashed on *Altrax* some years ago - later, scanners found no trace of the tiny escape pod.

Your task is to help Jag recover the escape pod - but the rival gangs of alien life forms are also looking for the pod and will try to ensure Jag doesn't reach it first.

By Chrysalis Software, from YPA Holdings, (02) 899 2277.

E.A. Goes One on One

Electronic Arts have announced the release of a basketball simulation, *Jordan vs. Bird: One on One*, which pitches the skills of America's two leading basketball players, Michael Jordan, top scorer of the Chicago Bulls and Larry Bird, from The Boston Celtics, against each other. This is the follow-up to Electronic Arts most successful sports simulation, *Dr. J and Larry Bird Go One on One*, and showcases graphics, sound and special effects.

The unique skills of both players are illustrated in *Jordan vs. Bird: One on One* as Jordan "The Slammer" and Bird "The Shooter" compete in three separate events, the classic match-up, *One on One*, the Slam Dunk Competition, designed by Jordan and Bird's signature event, 3 point Shoot-out.

A statistics screen tells the story after

every quarter, including the shots taken, shooting percentage, three pointers taken and made, rebounds, steals and blocks. Even the crowd participates in *Jordan vs. Bird* and Earl 'Weaver', Chuck Yeager, John Madden and Dr. J are there to watch.

Jordan vs Bird: One on One by Electronic Arts, is distributed by ECP. C64 and Amiga versions should be available soon.

StarGoose!

Questor have announced the release of *StarGoose* for the Amiga. *StarGoose* is more than your usual run of the mill scroll-n-blast type game. It includes features such as Full Beef Scroll (the whole screen at variable speed), 3-D Landscapes, 8 Levels, On Screen Scoring - just like the arcades, as well as *Star Geese* and their primeable missiles.

See if you can survive the defence landscapes, shoot through the supply tunnels and grab the jewels. If you are good enough, you might even get a new Fighter - the *StarGoose* itself.

Produced by Logotron, distributed by Questor RRP \$49.95 (Staray, by the same people is reviewed in this issue.)

Times of Lore

Now available on the Commodore 64/128 - this exciting graphic adventure features real-life animated time lines, easy to control icon systems, 13,000 different screen locations and outstanding graphics.

You can choose from three different characters as this real-time action game combines adventure and intrigue to present a challenge never before seen in a fantasy role-playing game. Stroll along the seashore, lulled by the rolling tide or explore long-forgotten desert ruins. Measure your strength, test your courage

over 200-300 hours of playing time.

Produced by Origin Systems Inc., distributed in Australia by Questor. RRP \$59.95

Rock Challenge

"I Second That Emotion" was a hit single for what group? What male rock star wrote the lyrics to the music of "Cat People"? What male artist was not allowed to be filmed from the waist down on his Ed Sullivan Show appearance?

If you think you know a lot about Rock Music, let Rock Challenge will put you to the test on music from the 50's to the 80's. Compete against family and friends in this original Rock 'n' Roll trivia quiz game with five categories, or build up your own knowledge of rock.

Produced by ReadySoft Inc. (the guys who publish Dragons Lair), distributed by Questor (02) 662 7944 RRP \$59.95 Amiga format.

Cosmic Bouncer

Imagine you are a tennis ball. Not just an ordinary yellow, fluffy tennis ball, but a tennis ball hit by a gigantic substance-life beam of the Gekkotron type from the planet Grump!! Due to a computer mishap, and a series of genetechnological miracles, the tennis ball comes to life!!!

Now this Cosmic Bouncer must find it's way back to earth and the only way is a treacherous, ever-changing path cluttered with death tiles, acidic blobs and disappearing floors. One wrong move will send you tumbling off into oblivion.

If you survive the 22 scrolling levels of mystery squares, super bounces and transporters you could earn yourself the title of Cosmic Bouncer.

Produced by ReadySoft Inc., distributed by Questor (02) 662 7944 RRP \$49.95 for the Amiga.

Ganymed

Guide your Star Warriors to victory over the oppressive Tyrann rule of the frozen planet Ganymed. Lord Mantrex, a freedom fighter, and his secretly gathered elite group of Star Warriors stand poised to make the final attack and regain control of the Imperial Palace.

If you like action, you'll love Ganymed. Keep your finger on the fire button as you maneuver around the Deathbots on the vast ice deserts.

Produced by ReadySoft Inc., distributed by Questor (02) 662 7944. RRP \$49.95 for the Amiga. □

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Lombard Rally



Fancy wrapping a shiny new Ford Sierra around a nearby pole? Perhaps you prefer sliding sideways through the gravel at 130kms? Richard Silsby put his foot to the floor as he tested out a top new game from Pac-
tronics.

Introducing one of the latest and greatest rally driving simulators to grace the monitors of computer users for a long while. So it is time to don your helmet, driving gloves and suit ready to test this latest game from the Software Laboratories of Mandarin.

The Lombard Rally is formulated after the Torquay Rally which has been held around the town of Harrogate, England, for the past 56 years. The Torquay Rally has a colourful past and now the excitement of this most stupendous race is available for you packed onto two Amiga disks.

An interesting fact about the Royal Automobile Club Rally is that a stage in the rally was once won by Colonel Loughborough with an average speed of

0.66mph. That year he drove a Lanchester. In your quest to win the 1989 Lombard Rally you will have to drive just a touch faster than the Colonel, but you have a bit of help as you will be driving a Ford Sierra RS Cosworth. As we all know, this machine packs a pretty powerful punch.

Lombard Rally boots up to a smooth graphic of the famous Ford, followed by a menu of options - mainly courses.

The first is that of taking in the Full Lombard Rally. But if you have just loaded the game, I am afraid you won't be able to go straight into the full rally. To qualify for the full rally you have to have completed at least five of the individual legs of the rally and won at least one prize.

The next five options allow you to practice on the five legs of the Lombard Rally in the quest to qualify for the full rally.

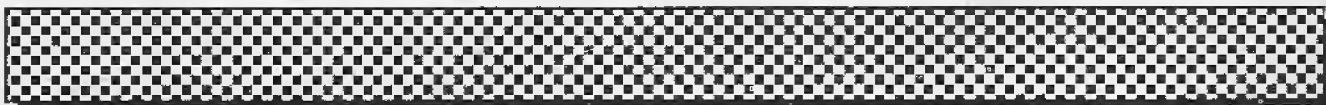
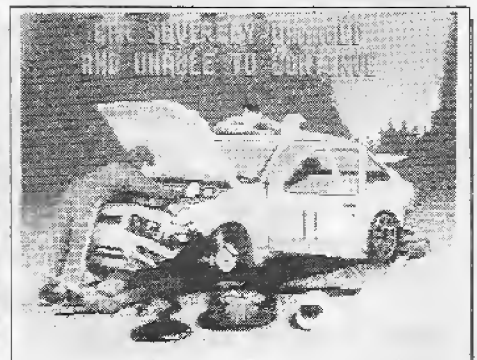
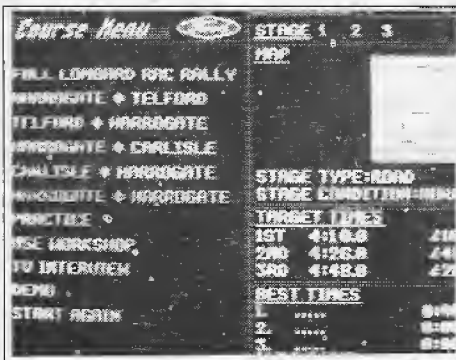
The five individual legs are: Harrogate - Telford, Telford - Harrogate, Harrogate - Carlisle, Carlisle - Harrogate, Harrogate - Harrogate.

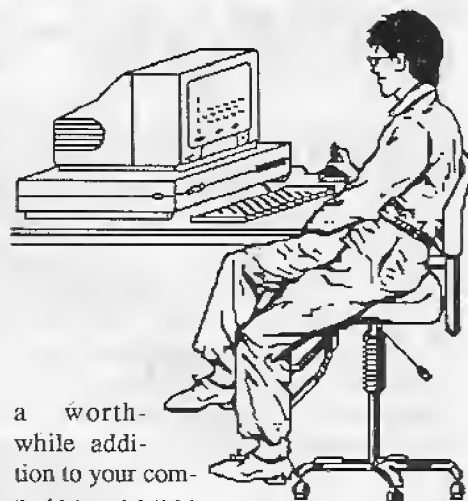
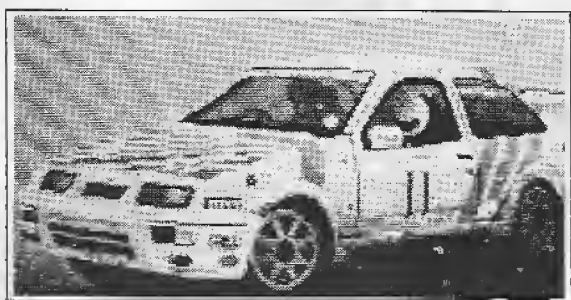
By positioning the cursor over any of these five options you are given a record of what the three legs of that course are like. They reveal the layout of the course, showing the objects that lie beside the road and inhibit your safe journey along that road. You are also given the distance of each stage, the road condition (which will include road, forest, and mountain).

Also they reveal the conditions you will be driving through (this will include normal, night, and fog). Finally you are given the all important time that you are expected to beat so as to win a prize. Beating the time given isn't as easy as it sounds, as it is the time to complete all three stages of that leg, not the time to complete a single leg.

The next option is going to the workshop to iron out some of the bumps that you have received from your attempt to beat the time for a leg, or to beef up your car. You are given a report of the damage to your Ford. It is shown as a percentage and it costs \$1 per 1% to fix. It helps if you have won some prize money.

Next, you can watch one of the vete-





rans of the RAC Rally show you the best way to handle the course. You are also given the choice to go to the practice course and sharpen up some of your driving skills.

The final option that you are given is that of becoming a film star. You take part in the Lombard RAC Rally Trivia Quiz. You are given 40 seconds in which you have to answer multiple choice questions on every aspect of the RAC Rally. The good news is that you are awarded \$50 for every correct answer, but the bad news is that you lose \$20 for every wrong answer. (At least that they never let your balance get below \$0.)

This is a great way of gaining money to give your car the needed repairs, but you are only allowed to go to the quiz once before each leg of the race.

Now you are ready to go back and compete in the Full Lombard RAC Rally. During the Full Rally you will have to finish all five legs of the race including the three stages of each leg. You will be competing to beat the time that they have set down to finish the rally. This will in-

clude all stages as your time is compiled.

Behind the driver's seat!

Once behind the wheel-well, actually you're not behind the wheel. Your view is that of a back seat driver. You can see, from left to right: the co-driver plotting your position on the course, the dash board with all its gauges, your gearstick in the centre, and to the far right you the driver sitting behind the steering wheel. The top third of the screen is the road ahead.

This setup is fine if you are really keen on watching the driver change gears and turn the wheel. But considering this is supposed to be a simulation, the point of view is unrealistic and at times frustratingly awkward to judge the road.

This shortcoming is made up for by the excellent way the windy, hilly, dusty road is portrayed. The hills restrict your view to a few short metres. At times the road disappears completely. When playing this game you will find yourself literally rising to the occasion.

Lombard RAC Rally is quite hard to master as a game. It will take many hours of play for you to be able to get onto the winners list. This makes for an enjoyable game as it will always be a challenge to play. But it is not so difficult that at the first chance you are likely to throw it at the dog next door.

The graphics and sound effects are good and well create the atmosphere of driving in a real rally. So all in all this is

a worthwhile addition to your computer games library, especially since it is such a good simulator of rally driving.

So the green light is on and it is time to get into The Lombard RAC Rally. The voice bellows out.. "Three, Two, One... GO!".



Review copy from Packtronics (02)
407 0261, RRP Amiga \$59.95
(Amiga only).

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Star-ray

by Richard Silsby

Here's another "blast'em into the next ozone hole" game that will knock your jockets off. Richard Silsby recharged his lasers and took off his rose-coloured glasses for this off the planet review.

How many times have you seen a Star Warrior on some T.V. space-opera, battling valiantly against an evil empire that seemed to have just woken up on the wrong side of their incubator? It's every kid's dream to be such a pilot. Hanging on by the fire button as your starship screams down a narrow chasm, filled with laser fire.

Here's your big chance. You've sailed past the acceptance tests, you've survived the trainer-sims, you've done the dummy runs on the ice planet Charon - at last, you've made it!

The first mission is on the planet Gor-

baxa. You're in charge of your own ship, so how could these guys possibly try anything while you are on guard?

The object of the game, level one - guard the energy cells. It looks like a scene out of *Defender*. The energy cells are from the mammoth star cruisers. These cells are priceless and dangerous. When the cells are gone the game is over. These installations change on each level: from energy cells, to forest robots, and antigravitational generators.

Your most common alien to begin with are Landers. These not only fly around and try to shoot you, but they try also to pervert the installations. Some of these landers leave a Bonus Ball behind when they are shot. These should be collected and enhance your ship in a different way depending on the letter on the ball. For example:-

- A: Improved Acceleration
- V: Maximum Speed is Increased
- T: Rapid Fire
- P: Laser has Greater Penetration

C: Continuous Fire for 100 Shots

I: Invulnerability for 10 Seconds

B: Bonus Points

If you stay stagnant for too long Blue Hunters come after you. Fearful opponents on your first mission are Krellian Mother Ships. These are harmless until they are shot, when they break up into several heat seeking UFO's which follow your exhaust stream. The list of nasties goes on.

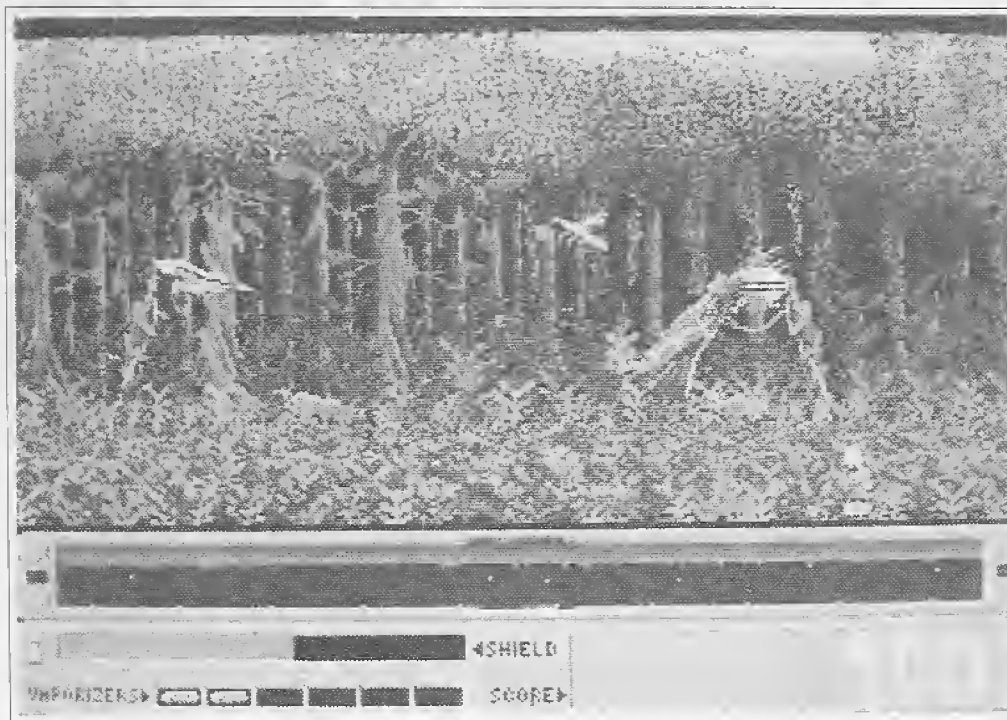
In all you have seven missions to complete, all of which have several stages to them.

You will find that the game *StarRay* is quick and difficult. It will take all your mental powers to overcome these creatures from the evil laboratories of Logotron. We are talking speed city - mega-fast turns, dodging equally mega-fast ships.

It is a vertically scrolling screen which pans both to the left and right. The graphics are very sharp - brilliant colours fill the screen with surrealistic backdrops. And as for the music oh! the music. This game has some of the greatest sound effects and backing music that I have heard for a long while.

All in all it is a great addictive game and if I had any awards to give these guys would probably take the lot. Let's just say that this is the game of the month, hands down, no competitors. (I didn't get to see *Super Hang On* - which I have heard is also a very good buy at the moment.)

All that is left to say is that you will need a lot of luck to get anywhere in this game, and may all the forces that you can find be with you! ☐



Our review copy from Questor
(02) 662 7944. RRP Amiga
\$69.95, C64 \$49.95.

Cosmic Pirates



Clicked on Games
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A super shoot'em up, with plenty of laser power and other extras you can buy your way into. Andrew Farrell boarded the simulator to decipher the game plot and file this preview.

An official preview. Amazing to think we actually got a disk through the official channels that is a preview copy, as in no box, no instructions, and no way you're going to know what to do. So, I sat and played the game for a good half hour, then thought long and hard about what I was trying to achieve. I may be off the track according to the final blurb on the game box, but here's what I thought.

You're a pirate. By raiding various groups of craft looming the galaxy, you can collect the loot. From there you can buy extras for your ship, use the simulator, or run higher missions. The action is fast. The graphics are mean, and the space sound effects fit the play. Presentation wise, *Cosmic Pirates* looks slick. There are plenty of smart options, and a long haul of mighty hard challenges before you beat the game.

Play takes place over a nine way scrolling window into a space sector. At the centre is a space station surrounded by space junk. Pay the 1000 credit toll, and you can warp your way to greener pastures elsewhere.

You move in a very definite nine direction. There's no auto fire. A fast joystick is a must. The alien ships attack in waves or singularly. Some meander about aimlessly, whilst others go for an all out attack on you.

The variation in attack makes it tough. You have to keep a sharp eye on your radar. As you play, damage builds

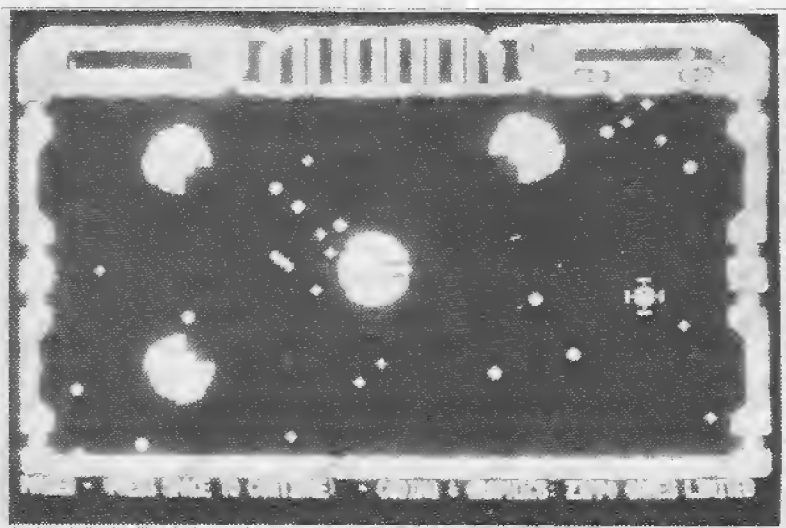
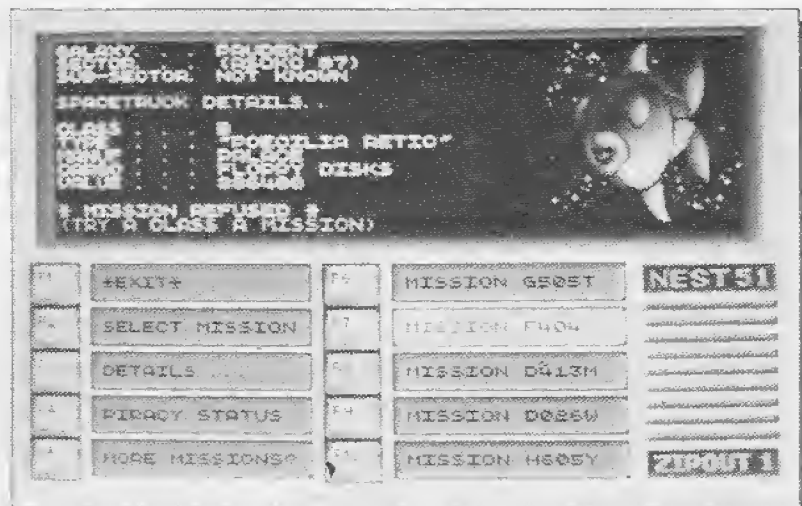
up until your ship explodes. Your shield will absorb direct hits. By keeping away from the action, you allow time for your shield to recharge.

Cosmic Pirates has a fair share of tactics, combined with dexterity and fast trigger finger action. I enjoyed it. A pre-run in the vector graphic simulator is es-

sential. Here you get a good look at how the enemy moves. Sometimes it's best to stand and fight. Other times you have to keep on the move to avoid in coming fire.

A well thought out game, that has a lot of potential. Watch out for *Cosmic Pirates* near you soon. Recommended! □

Our preview copy came from YPA (02) 899 2277 Price TBA.



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Another racing game - and it comes complete with a replica of the real thing - a Porsche 944!
by Richard Silsby

You sit idling at the starting line, the single turbo mumbling and popping, your knuckles white. The other cars are bunched around your front end, edging their way forward ready to let everything loose.

Suddenly the green light appears and you pound your right foot to the floor. Your mind becomes one with your whole body as you change up through the gears. As the starting grid quickly moves away from your line of sight, your foot continues to hammer the accelerator below. You reach the first turn and for the first time the accelerator gains relief from the floor as you select down a gear.

Thrills such as these can be obtained if you take your position behind the wheel of your very own Porsche, and take it for a few laps of perhaps the Paul Ricard Circuits, or even the Nogaro, Dijon-Prenois, or Magni Cors circuits. You can take your pick in this latest game from Loriciels, called *Turbo Cup*.

You are behind the wheel of your own Porsche 944 Turbo - it is yours to burn. The *Turbo Cup* consists of two races for each circuit. The practice or qualifier is the first where you attempt to drive like the wind to qualify as close to poll position as possible. Then it's the real thing.

It doesn't matter where you qualified, because if you want to stand atop the podium holding the winner's trophy you have to show to all the other drivers one thing - your dust.

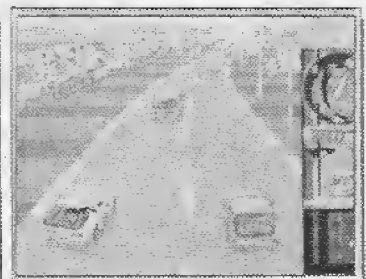
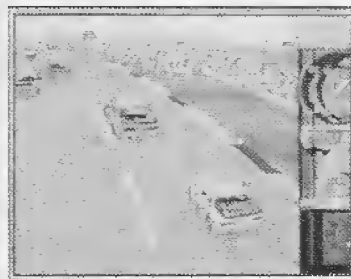
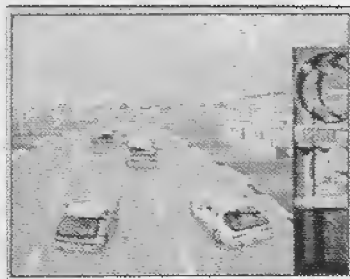
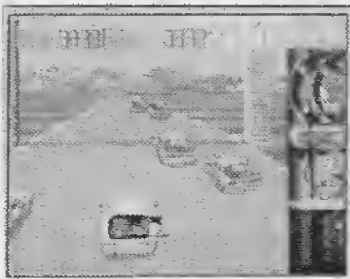
This game is good. The Porsche is a sensitive beast - but a few laps around the track and you'll be hanging every corner. Spin outs and massive collisions are the order of the day to begin with.

Your car is quick to react. I found myself in more barrel rolls than anticipated. I knew I was a bad driver, but not that bad.

The graphics show good detail and colour, adding to the excitement of driving. I found the sound effects not quite as accurate as they should have been. It was the worst sounding Porsche engine I have ever heard.

Turbo Cup is good clean fun. It's easy to get into - but hard to master. You can play with automatic gear changing, or do it yourself. How about a two player version, guys? Recommended playing! □

Distributed in Australia by
Pactronics. RRP Amiga with model
Porsche \$69.95, without car \$49.95.
(Amiga only).



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S M A R T E R .

SUPERMAN

THE MAN OF STEEL

by Richard Silsby



Let yourself go in this comic book world of Superman and your arch enemy Lex Luthor. In this computerised comic book you are the only one that can write the conclusion to the story.

At the beginning of the game you see the opening page of a comic book. A book without an ending. Without an ending until you come along of course. Going through these pages, the captions appear telling you about the position that Superman finds himself in. Since you have become Superman you have the power to help the man of steel through any situation that he may come across.

To help you out you have had transferred to you through the generations of the Super Clan the secrets of various powers ready to be used against any villain that may trouble you. These powers are:-

- The ability to fly
- Heatvision
- The power of a Super Punch
- Along with the power of a Super Kick
- Telescopic Vision
- Finally Super Breath

This last power is especially useful over the evil powers of Bad Breath. You have several missions in which all of those super powers will be tested on your way to overcoming your main enemy Lex Luthor.

After you have read each comic page you will find yourself battling against some evil forces. Firstly against the forces of Darkside evil Parademons.

Then on your way to meet Professor Corwin at STAR Laboratories to brief you on why there have been so many earthquakes and volcanoes rocking the earth, you arrive and find that you have to blast a path through the asteroids that are soon to crash into the professors shuttle. You reach the

destination safely but find that the security system is malfunctioning on the satellite. So you must disable the satellite's security system. Then you have to enter the satel-

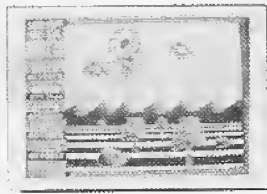
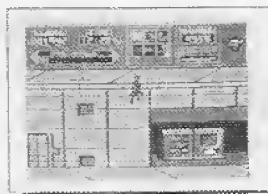
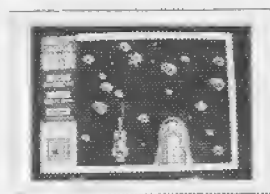
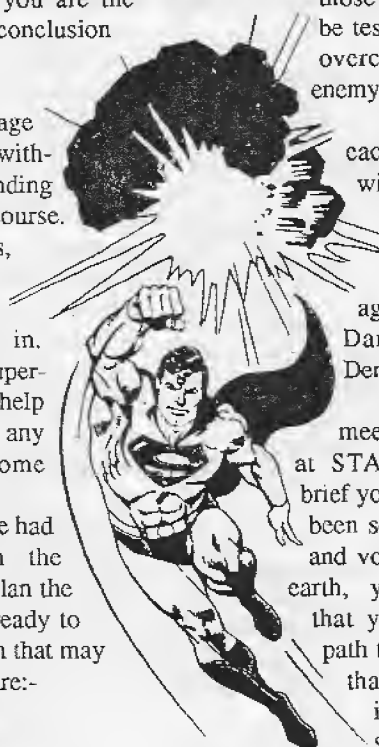
lite and destroy the defence systems. Now having recovered the satellite you must protect it from another asteroid storm. Finally you must arrive at "Lexcorp's" space station and put it out of activity.

Having done this the Man of Steel can once again relax knowing that he has Lex Luthor behind bars, so that the world is safe once more.

Superman is a technically well made game for the C64 - the sound and graphics are better than the usual standard C64ers have had to put up with lately. I especially enjoyed the playing of the theme song to the Superman movie.

Superman plays on your agility and eye to hand co-ordination. Mental skills are not called upon to any great degree. □

Our review copy came from Questor
(02) 662 7944. RRP C64 \$49.95
(C64 only).





Clicked on Games
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SUPERBIKE CHALLENGE

A fun racing bike game for one or two players, on twelve grueling grand prix courses.

by Richard Silsby

Prepare to take your place in the world championship of motor cycle racing. Competing with such names as Wayne Gardner, riding to become the World Champion of the motor cycle fraternity.

Superbike Challenge, from Broderbund, is a game where you can choose to compete in either the Full World Championship Tour travelling from such courses as the Japanese Circuit to the track in Spain or if you don't want to compete in all twelve countries, you select from any of the twelve circuits and take in a few practice laps at say the circuit in Austria.

During game play, you don't have to be a computer wizard to keep up with the leaders. For most people this means a lack of real challenge and therefore enjoyment.

Superbike Challenge allows you to choose either Novice, Intermediate or

Pro mode. I chose Novice. In this mode I was just able to compete with a chance of winning.

When racing, your view is looking from several metres behind your cyclist. The picture forms itself around your man, making him always the centre of the action. On the other side of the screen is your opponent's man being followed around the circuit. There is also a speedo, an RPM gauge, along with an indication of the gear that you are travelling in.

These gauges are located at the bottom of the screen. At the top of the screen you are given your last lap time, the number of laps that you have completed, and a look at the shape of the course and your current position on it. Finally they show the order of the four rid-

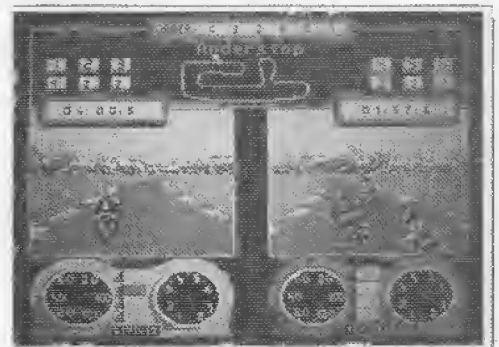
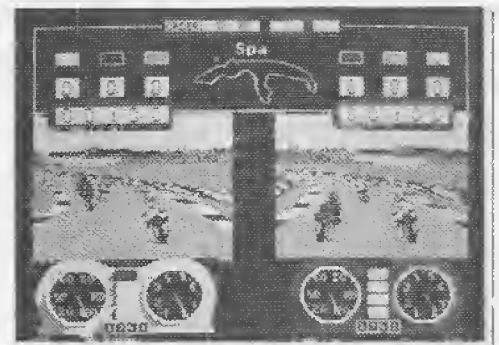
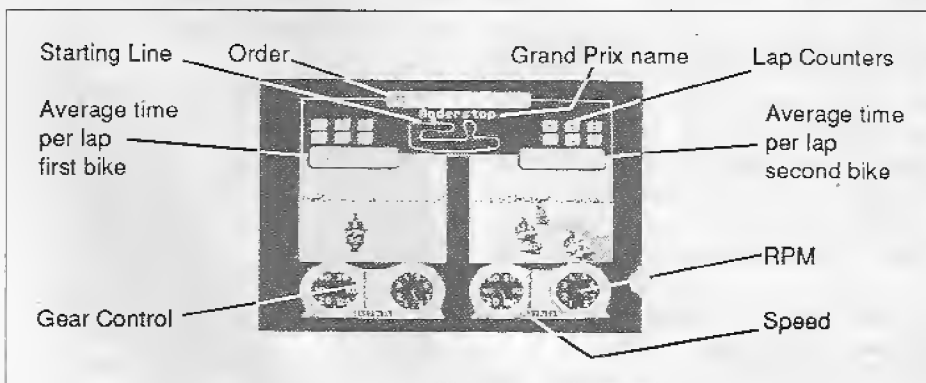
ers in the race.

I found the graphics okay. Just okay! The detail that was shown was poor and sparse but the moving background and the continual snake-like effect of the course revealing itself to you did make the graphics slightly better.

I found I had to turn down the sound because after playing for awhile the monotony became unbearable.

All in all, *Superbike Challenge* is an interesting game to play but I felt let down by some aspects of the game. I don't recommend it unless you are desperate for a new motor-bike simulation. □

Our review copy came from Dataflow (02) 331 6153. RRP C64 \$15.95 (C64 only).



NAVCOM 6



by Eric Holroyd

That's what it says on the nicely drawn title screen of this newly released combat simulation from Microprose, where you're the NAVAL COMmander of area 6. It's another one done under the joint marketing agreement with Cosmi and one of its programmers is Paul Norman, who'll be known to most 64 users as the guy behind the *Super Huey* helicopter simulation.

It comes well-packaged on one double-sided disk with a comprehensive manual and a separate command summary sheet. The scenario is set in the Persian Gulf war between Iran and Iraq, with the US Navy assisting the latter by way of escorting its merchant ships through the Gulf and its minefields. Iran is attempting to disrupt the Iraqi economy by destroying as much commercial shipping traffic as possible. As a result of several defeats by Iranian land-based forces, they've increased their attacks on Iraqi shipping and have started to attack US ships too.

This is where you come in, as the commander of the USS Hunter, an Aegis Class Cruiser which is the command ship of the Surface Action group known as Alexander. You need to absorb all the military intelligence relevant to the area, then analyze and act on it by planning counter moves to enemy actions.

You're seated at your Command Center, which is a bank of screens and consoles, and to simulate whizzing around on your castors to check each display for developments the programmers let you scroll sideways around the displays with a joystick in Port 2. Scrolling is quite smooth, the displays well drawn, and there's regular interaction between player and program where you're told to check something on one of the displays, then

type in your decision or some other answer.

It was here that I had a few frustrations due to the machine being most unforgiving of my many touch typing errors. Whenever I entered something it didn't agree with I got the error message "Learn to type, Sir!" so I had to slow down on my typing to make sure I got it right first time. My fault, not theirs though.

As with a lot of strategic simulations you get the feeling of being the "Queen Bee" in the middle of it all, but in *Nav Com 6* the excellent graphics and good game play add to the realism of it all. There's a full complement of weapons and missiles, as well as radio, radar and sonar, all of which are described in full in the manual. So too is the USS Hunter, with a full rundown on its fixtures, fittings and crew (33 Officers and 327 Enlisted men).

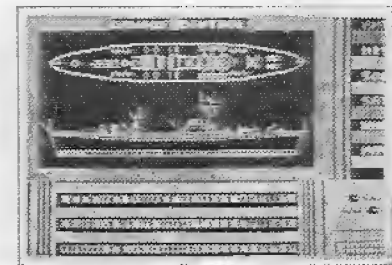
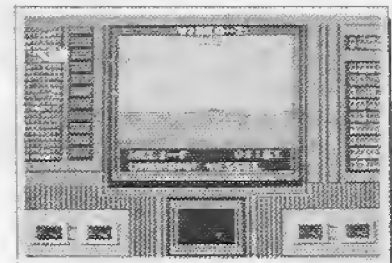
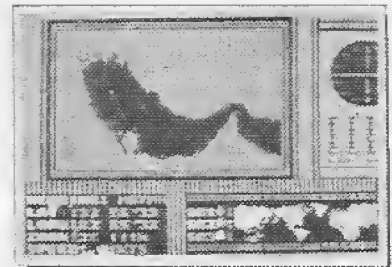
You have a wide choice of Training Exercises and Convoy Escort Duties with all aspects well detailed in the manual, which also has a number of helpful guidelines on what to do about various situations such as Air Attack, Mine Fields, Ship to Ship Attack etc.

The "biggie" is the action known as Priority One - Condition Red. Here it's believed that the Iranians' nuclear bomb, previously based at the Northern end of the Gulf, has been loaded aboard a ship to strike a US target "somewhere in the Middle East", Iran having no launch vehicle capable of sending it by itself. This ship is to be escorted by everything available in the air and at sea so there'll be quite a fight ahead.

Obviously, the ship carrying the device can't be hit or we'll all go up anyway, but we don't know which ship is the

one. All we have to go on are some intercepted radio messages and there's much detective work to do on this aspect of the job as well as carrying on the fight at the same time.

You can see that there's a lot in this program and if you're a fan of combat simulations you won't be disappointed with this one. Saving the world from charging headlong into World War III via the Middle East is going to take you quite a while but stick at it, you and your 64 might just achieve something. □



Review copy supplied by Questor
(02) 662-7944 RRP cass \$49.95,
disk \$59.95.

WAR IN MIDDLE EARTH



by David Phillip

Based on the famous *Lord of the Rings* trilogy by J.R.R. Tolkien, *War in Middle Earth* is a game of planning, tactics and strategy - where you are the ultimate commander. Anything from moving individuals right up to planning battles of thousands, you control the moves of all characters in this extravaganza of strategy and timing.

Be warned, this game is for the serious strategist only. It is complex, in-

volved, and takes an extremely long time to play - but it is worth it. The game conforms very well to the original story, in that all the characters are in their correct positions with their relative strengths and weaknesses at the beginning of the game.

It starts just after Bilbo has left for Rivendell, and Frodo has received a letter from Gandalf, saying he is late and Frodo should set off without him. At the beginning of the game you (Frodo) are in the Shire, accompanied by your friends Sam and Pippin with all nine Dark Riders searching for you. You have to be quick on your feet to reach Buckland and rendezvous with Merry without meeting one of these nine Nazgul Lords. This is extremely critical as your character does not have the strength to battle any of these monsters, and any meetings tend to prove disastrous.

The game is excellent in its graphics and tactics - with three different levels of play in the game itself: an overall map level showing the positioning of enemies (red) and allies (green), a strategic level where you input commands to your individual characters or armies, and an animation level where you can see battles, movement or indeed whatever the character happens to be doing at the time.

Having said all that, I now feel it is time to get down to the nitty gritty of what I didn't like. The graphics, while excellent, try to do too much at the animation level and you frequently find that

the interesting bit of the animation has been overlaid by the numbers in the armies and you are unable to make head or tail of what is actually happening. Equally unfortunately when one of your characters meets another you are dragged straight to the animation level where it is possible your cursor will be covering part of a speech, and it is just too bad, as there is nothing you can do about it. Also there is the constant dilemma of what to have your time speed set at (normal, hasty or very hasty), as you have no warning of things about to happen. This means you may be battling the Wizard Saruman in one section and have another section of your forces surrounded by Sauron, the Dark Lord, while this is happening.

It takes a while to do anything constructive as you have to wait between 10 and 30 seconds to change between levels. This is partly mitigated by the fact that you are able to save and load the game. But only partly, as there is only the facility to load and save the one game at any one time. This can be a nuisance, if like me you are not the only one who uses the computer. Arriving at the keyboard to find someone else's game on your disk can lead to acrimonious discussion.

These are minor complaints: this is an extremely interesting game, which can generate hours of fun and enjoyment - but only for those with the time and patience to master and play these type of games. □



Available soon from YPA
Holdings (02) 899 2277. Price TBA.



DEF CON 5

by Eric Holroyd

This is a "strategic defense initiative simulation" where you get to control America's "Star Wars" defence system. You're actually monitoring DEFence CONditions through a series of five situations, the lower the number - the more serious the situation. It's a blend of arcade action and strategy which comes up well enough on the Amiga, with plenty of mouse pointing and clicking to select the various gameplay options.

To start off there's a good title screen done in the now-familiar bas-relief simulated metal plates with screws and studs, then you're on to the main display which is a sort of monitor console. Here you need to switch on the power by clicking the PWR box, then there's a choice of INFO or MAP.

These two are where all the intelligence is gathered and all decisions made, and directly below the viewing screen is a scrolling message line which gives you warning of enemy attacks. This gives the type of attack and directs you to access a particular MAP or INFO item to counter it. You'll get something like: Interceptor attack in Sector SA11, access Info7. This leads to a course of action and you click through the various menus to eventually get a satellite view, where you fight the enemy with the weapons you've selected.

In one of the scenarios you're advised that Space Mines are attacking (a Def Con 4 situation) so you activate your ASMs (Anti Space Mine Robots) and watch their progress on a display screen overlaid with a grid. Guide the ASM's progress by clicking onto the grid coordinates and when you've intercepted the Space Mine your view changes to that seen by the video camera atop the ASM. It's time now to defuse the Space Mine and the ASM has an "articulated manipulator claw" which you use in doing just

that. Remove the hatch cover from the Mine with the claw, take out the fuse to deactivate it, then replace the cover.

You've only got 30 seconds to do all this once you've actually touched the hatch cover, then the Space Mine detonates and destroys both the ASM and itself. Touching any other part of the Mine will cause it to detonate, so it's just as tense as real-life bomb disposal work. Just to make it more interesting the ASM "may drift unpredictably during the defusing process."

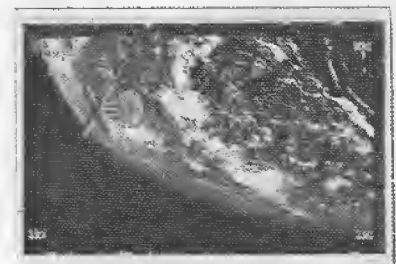
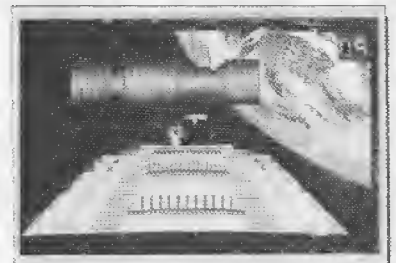
Def Con 5 seems to be pretty well thought out, with a great deal of attention to detail. For instance there are six GCL (Ground-based Chemical Laser) facilities, four in the USA, one in England and one in Australia. (Could this be Pine Gap, I wonder?) There are Decoy Deployment Detonators (D3), Electro Magnetic Launchers (EML) as well as two other types of laser weapon. One is the Nuclear-pulsed X-ray Laser (NXL) and the other is one I'll bet they don't have in Russia as it's called the Free-Election Laser (FEL). There's much communication equipment too, with a great deal of interaction between you and your console.

DEF CON 5 is peacetime, DEF CON 4 is when an attack has been mounted on you, DEF CON 3 is when all forces are fully mobilized and poised on the brink of war, DEF CON 2 is when nuclear weapons are believed to have been launched and DEF CON 1 is war. A range of pre-defined actions may take place during each of these DEFence CONditions and knowing what to do and when to do it will really keep you on your toes.

I had a problem with the software when loading it due to the protection scheme involved. It's a variation on the "enter a word from the manual" idea and involves you logging on to COM HQ

with a code from the book. No matter what I did with this code the program kept telling me it was wrong so I rang Questor's support department to see if they could help. They could and they did, and it was a misprint in the manual! When you come to log on, simply add an extra 0 (that's a zero) to the code shown on page 6 of the manual and you're in. Obviously, misprints by manual printers will happen from time to time, but it was nice to know that Questor was on the ball and could help.

Although I'm not generally a war simulations player, I've seen quite a number recently that I enjoyed and played for a while. This one had more strategy than action however, and so didn't appeal all that much to me personally. I played it but didn't get hooked on it, probably because I like fast action and get impatient if I have to stop and use the old brain a bit. □



Review copy by courtesy of Questor (02)662-7944. RRP Amiga \$59.95, C64 disk only \$59.95.

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Speaking to the world on your C64

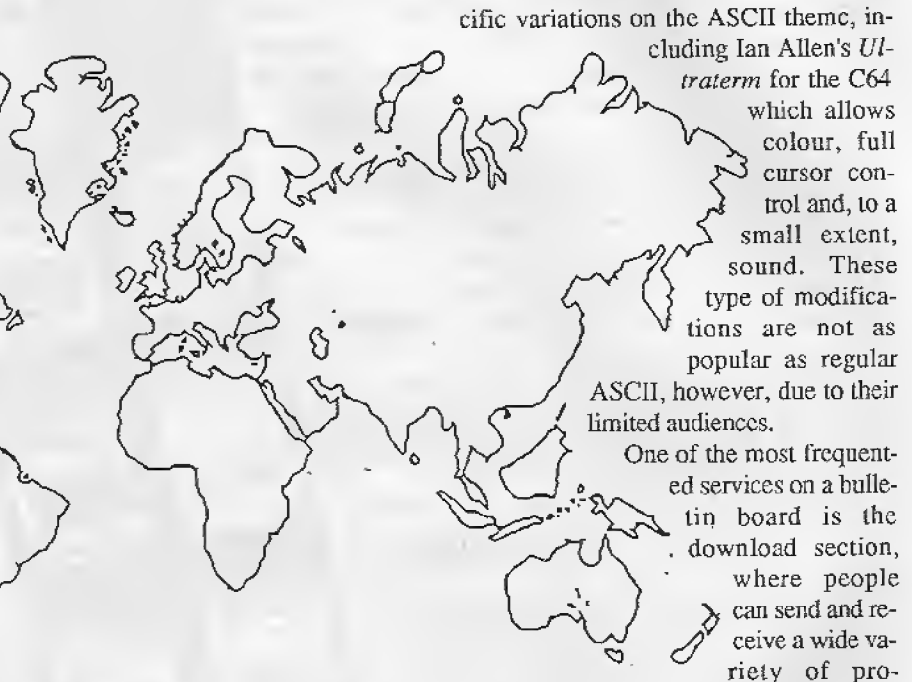
by Cameron Martin

WOULD YOU LIKE to be able to receive mail via your computer from all over the world, compete with hundreds of other people in playing computer games, be able to talk to someone by merely typing on your computer, send or receive software along a telephone line? You can! To find out how, read on . . .

I'm sure to many of you this all sounds pretty farfetched, but believe me it isn't. The technology that is required for doing all of the above plus much more has been around for several years now, but only within the past few years has it been within the price range of the average home user.

So what is this technology? To put it simply, a modem. Let me explain - you simply plug a modem into the user port of your Commodore 64, just as you would a joystick into games port, and it changes any character on the keyboard into a tone that is sent along a telephone line.

At the other end another modem translates this tone back into the original character and then the computer is free to do whatever it has been programmed to do when it receives that character - from simply displaying it on the screen to changing the colour of the screen. There is really no difference between what the modem does and when you normally use a telephone except for what actually is sent and received along the telephone line - you are still charged the same by Telecom that you would be if you were talking.



Bulletin boards

The next step that was taken was for a specific place for people to ring when they used their modem. These places were appropriately called "Bulletin Boards" or BBS, due to the fact that in the early days they were essentially message systems.

The person who ran the computer was called the SYSOP (pronounced SIS-op) or SYSTEM OPERATOR. These BBS started out being very primitive but have now evolved into two main types: Videotext and ASCII.

ASCII is essentially just straight characters, with no fancy features, while Videotext is a system based on a 40 x 25 screen display with some bells and whistles such as colour, flashing on/off, and low resolution (ie very chunky) graphics.

There are various other computer spe-

cific variations on the ASCII theme, including Ian Allen's *Ulterm* for the C64 which allows colour, full cursor control and, to a small extent, sound. These type of modifications are not as popular as regular ASCII, however, due to their limited audiences.

One of the most frequent services on a bulletin board is the download section, where people can send and receive a wide variety of programs. An offspring of this is "demos" which usually consist of stunning graphics, superb sound and a scrolling message which contain everything from greetings to other users to advertisements for various bulletin boards.

However, there are some rather nasty "side effects" of being able to download. Some people thought it would be fun to upload programs that when downloaded and run, would, for example, format the hard disk or do other such things to the detriment of your computer. Fortunately, due to the configuration of the Commodore 64, this sort of thing is rare.

Messages

Another dimension of the world of telecommunications is the messaging capabilities of a bulletin board. It is just a matter of typing the message and away it goes to its designated recipient, or in some cases is "echoed" around networks

of bulletin boards, where one bulletin board would send the message to another and so on, even bulletin boards internationally might receive your message!

Also due to the fact that so many messages "echo" from BBS to BBS, you get the latest information sometimes months before the poor people who don't have modems do. To show you just how cheap it is to use this service, for under 30c I can send a message nationally almost instantaneously and I'm sure it will get there (Australia Post had better smarten up their act if they don't want to go out of business!)

Multi-player games

One of the advantages of the fact that a large group of people can call into the one source is that a very large multi-player game can be played with ease. Everything from chess to dungeons and dragons to science fiction shoot'em ups - everybody is catered for.

Some of these games have become such a cult that people ring the bulletin board solely for the purpose of trying to get an edge on their fellow competitors by having more turns. This is understandable when fairly large prizes are being offered in some cases.

A modem opens a whole new world in your Commodore 64 and I certainly recommend to you that you think seriously about purchasing one. With several modems well within the average user's price range, modems are certainly not toys for the rich anymore. In some ways the saying "I don't know how I managed without it" would have to apply.

I suppose that it isn't as essential as say, a disk drive, but once you have it you are hooked. I would definitely regard it as my best investment in terms of hours used and usefulness. Perhaps you'll have taken the plunge and I'll be hearing from you on the bulletin boards soon . .

If you wish to contact me please leave a message on Paragon BBS (02) 597 7477 or via net-mail addressed to Cameron Martin.

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Professional Desk Top Publishing for under \$5,000

by Rod McCallum

IN JANUARY, 1988, I did a lot of homework and found that there was definitely a market for a monthly business magazine in my area.

I had planned the format, checking with my printer that I had the most economical "cut" from the paper stock I'd chosen. My concept had received the support of some of the major retailers in the area. I had a printing quote.

Now for the typesetting. "Go and see Acme Typesetters," Richard suggested. "Acme does quite a lot of setting for advertising agencies like ours and he has set himself up pretty well. I know that his computer-operated equipment cost him over 80 grand."

I knew what I wanted. The essence of good communication is simplicity. If I smothered my pages with ten different type styles people would find it hard to read. One standard face for body copy would be sufficient. Sub heads, to break up solid blocks of copy, needed to be in a contrasting yet readable face.

Typefaces

I needed a face like "Times" for the body. The *Review* is set using body copy with a "serif". The horizontal serifs that form part of the design create a line for the eye to follow. A full page set in a serif-styled face is a lot easier to read than one that is set in "sans" serif. What I was looking for was a serif for the body copy, with a sans to break up blocks.

Acme had a typebook full of faces. The classical "Helvetica" was one of the sans serif faces available. "Eras" was another as was "Futura". In the serif faces Acme had "Souvenir", "Century", and a "slab serif" called "Rockwell". I chose "Century" as being the closest to "Times".

Page layout

"Have a look at this," said the manager. He rattled some keys on the computer keyboard and up on the monitor came the image of a complete magazine page. I could read the headlines and distinguish the type face being used. Blank areas were left for the illustrations. But the body copy was shown as straight lines. No problem. Take a closer look by zooming in.



A few key strokes and I was looking at a closeup of the first paragraph. Now I could read every word, and noticed that it was set in a bold italic. More keyboard activity and the complete paragraph was moved to another place on the page, just like "cut and paste" with a word processor. Another command to the computer, and the bold italic became underlined, and in a completely different face.

Satisfied with the page now? O.K. Let's print it out.

Within a couple more minutes the page was there, ready to receive the photographs. Next stage would be to send it to the printer.

One person . . .

Having spent some years in the heat and racket of a newspaper's composing room, where furious activity was rife, this was a bit of a revelation. Instead of a

Linotype operator, there was a keyboard operator. Instead of a compositor, there was the same keyboard operator. Instead of a stone hand there was the keyboard operator. One person could take the place of dozens and the smell and mess of inking up a proofing press was taken over by the quiet whir of the machine that turned out the finished typesetting.

"A hundred dollars a page," said the typesetter. And, having been brought up on the fact that typesetting is not cheap, I accepted. But after two issues I was having second thoughts.

My copy was formatted on a wordprocessor. The printout was seen by my clients and alterations made before being saved to disk. I was using *Superscript* on a Commodore 128. Then I needed to cast-up my copy so that it would fill columns accurately, send page layouts and copy to the typesetter, and wait for him to have it keyed in again, set, and returned. Usually he'd have a girl working far into the night to key in the copy.

In the haste to get the job through errors were occurring and I had no facilities to make last-minute changes. I decided that I'd look into the costs of setting up my own Desk Top Publishing, but 80 grand was out of the question.

Advertising is not cheap, and if it doesn't produce sales it becomes downright prohibitive. It was with some amazement, then, that I discovered that there are many retailers out there who don't have a clue on selling computers. I went into shops and stood around waiting to be served. And when (and if) I managed to get the car of a "salesman" he just didn't know about DTP.

"Well, can you let me talk to someone who can give me the information I want? I'm ready to buy all the necessary equipment, but I want proof that what

you have is what I need!"

If I had pointed to what I wanted, and put my money down on the counter, I would have made the retailer very happy. But as far as being able to sell, and having the necessary product knowledge, most retailers just did not seem to know. But not ALL retailers.

Some answers

Having tried to buy an Amstrad, Commodore and various IBM clones, I tried the local Apple dealer and a Commodore dealer who had recently opened up operations from West Australia. I finally got my answers.

The Apple organisation is professional right down the line. The premises exuded quality. The salesman who attended to me knew his product thoroughly. No wonder that they sell a lot of Macintosh computers. He gave me an identical demonstration to that given by Acme, but he showed me that I could do it, in my own home, on the top of a desk. His quote of just under \$20,000 which included Macintosh, hard drive, large monitor, software and laser printer was still a bit high.

Could I do better? That's when I wandered in to the latest Commodore retailer in Adelaide.

Laser printers

If you are going to produce your own DTP productions you can't do it with printouts from a dot matrix printer. You must have a laser printer than can give 300 dots per inch quality, and there are two breeds of lasers for you to investigate. One is the PostScript printer at about \$8,000, the other is the Hewlett Packard compatible for considerably less.

Without going into technicalities at this point, PostScript is a language that lives inside certain laser printers and which can be used via software to unlock a feast of typefaces, as many as you could ever wish to use. The QMS-PS 810 laser printer, for instance, can

give you Courier, Times, Helvetica, Bookman, Century, Palatino, Zapf Chancery, and Zapf Dingbats. No extra font cartridges needed! The Hewlett Packard Laser Jet Series 2 can give you Courier (like a typewriter face) and Lineprinter, which is a sans serif. Buy extra fonts via cartridges or downloadable soft fonts, and you can boost your type library.

So what did I choose? Exactly what the Commodore retailer was able to demonstrate to me. He introduced me to the Okidata Laserline 6, marketed through Commodore dealers as the LP 806 laser printer. Resident inside this printer I got my "Times" typeface in 10 point and 8 point, plus a 14 point "Helvetica" bold, "Courier" in 12 point, and 8 pt "Lineprinter". This was linked up to an Amiga 500 with the 1 megabyte upgrade, a second drive, a word processor, *Scribble!*, (which is so easy to use you don't even need a manual), and *City Desk* as the software to format everything.

I type my articles and save them to disc. Hard copy printout is via my Star NL10. The Commodore interface I needed with my 128 was removed and replaced with a parallel interface, so I didn't need to buy another dot matrix printer.

City Desk

When copy is approved, alterations are made and saved to disc. I load *City Desk* which presents me with a view of an A4 sized page on the screen and columns set to the column widths of my publication. I load my text files via the second drive and pour them straight into

the columns.

I can use a 6X zoom to view my type before printing it out. I can change typefaces. I can highlight a block of type and reformat it to span across two columns if I wish. I can download Amiga fonts for special headlines and enlarge and expand these as I wish. I can import clipart and "pour" type around it. Sheets of type from the laserprinter are sprayed on the back with "relocatable" adhesive and I pasteup each page ready for the printer.

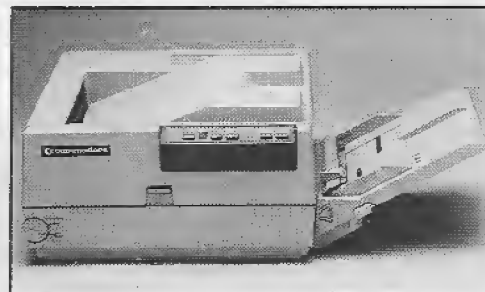
Not being terribly keen on the quality of screen bromides provided by printers, I bought an 85 screen, and make my own. Quality is far better, and I control every step of the production process with the exception of the actual printing.

How much did it all cost? Just under \$5,000. It has paid for itself in six months because I now do a few extra brochures and typesetting in addition to the monthly magazine.

There is also a great deal of satisfaction in Desk Top Publishing. You are the master, and you only need ONE person to do it.

So shop around. If you don't get help from a retailer, move on to one who will. Not only did I get every single question answered from the retailer I chose, his backup service was excellent. And have a closer look at the Okidata Laserline 6. It will probably make DTP possible for you as it did for me.

Footnote. Six months ago I sent away for a *City Desk* update. Five letters over that period (none of them ever answered) culminated in a duplicated circular a couple of weeks ago. The new *City Desk* will be available in March 1989 (?). The program is far better than the people who market the software. Watch for a review in this magazine when we've managed to have a really good look at "Version 2.0". □



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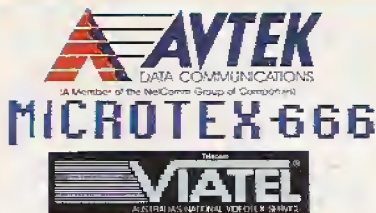
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Excelerator Plus - *how compatible ?*

AS A LOWER cost alternative to the 1541 the Excelerator Plus disk drive has gained wide acceptance in Australia in its own right, or under the name of OC118-N. This unit first appeared on the market in about June 1987, when imported by Micro Accessories of SA.

Later the licence was split for a while, with Westend Computers bringing in the OC118-N, and Ufton Holding the Excelerator Plus. Uftons have exclusive rights to the drives in Australia.

The box for the Excelerator makes several claims, some which are obviously correct, but let's look at one claim specifically.

Guaranteed compatibility

There are four types of Kernal ROMS that are available in the Excelerator Plus. The type of ROM will affect many things, as we will see later, however the first type of rom which appeared in the MASA drive we were unable to test, and we will report only on the other three.

To verify which ROM you have, you will need to read the ROM label. With a fast load cartridge this is as simple as

turning on your 64 and entering @. For those without a fast load cartridge, there are many DOS wedges which will allow you to check the DOS version.

The three messages we will deal with here are in order of appearance:

1. 73,CBM DOS V2.5 1541,00,00
2. 73,R-DOS 40 TR. 1541,00,00
3. 73,JIFFYDOS 5.0 1541,00,00

Type 1 DOS is a copy of the original 1541 DOS, and was in use up to about three months ago, when a change was made (rumour has it at the express orders of Commodore Australia). This DOS is fully compatible with the 1541 and gives great results and in fact makes the Excelerator one of the best drives on the market.

Type 2 DOS is the first replacement for the Type 1 DOS, and has problems handling more than one sequential file, which can really knock around your use of wordprocessors etc. It also will not load any of the new versions of Microprose software, including *Gunship*, *Gato*, and others. There have also been unconfirmed stories of other programs with built-in fastloaders not working.

Type 3 is the newest replacement

DOS, and appears to work reasonably well provided you use only standard DOS in your 64. If you use non-standard DOS, then here are a few problems you might encounter.

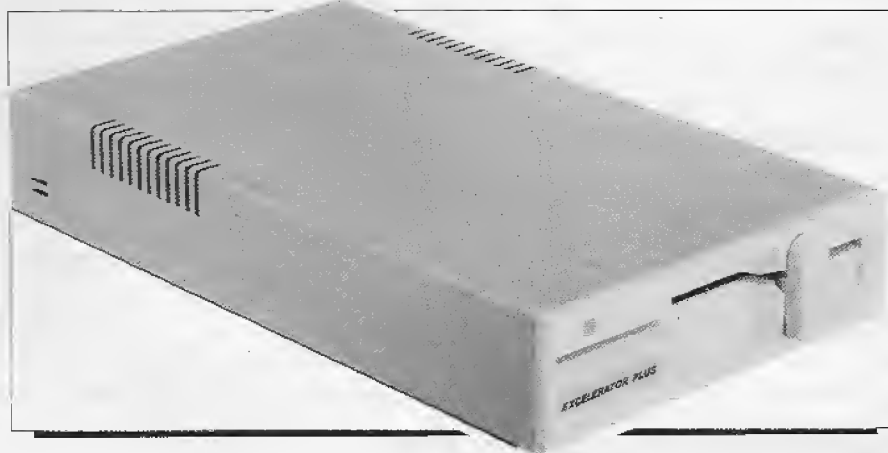
- Datel Turbo Rom - 10% of programs tried loaded, and disks will not format.
- Cockroach Turbo Rom - Varied from drive to drive, but average success in loading was about 70%, format worked okay.
- Freeze Machine - loading about 90% (better on smaller files than larger), format won't work.
- Action Replay IV - loading 80% (multi load programs failed after about three loads), formatting OK, but screen drops into M/C monitor after about five minutes, and disk appears to go missing needing a reset to get back to normal.

Whenever a fastload/copy cartridge is used with this DOS, the occasional freaky occurrences seem to happen.

For those who would like the ultimate fast load with the fitting of the new Excelerator DOS (Dolphin DOS redesigned for the Excelerator/OC118), if you have version 3 DOS then forget it, as this DOS will not work with this Excelerator DOS at all.

As you can see from the above, the Guaranteed Compatibility is not all that you would expect. There is one other claim on the box of the Excelerator which could be challenged and that is the claim of 30% faster.

Tests on normal file operation conducted on all the roms above showed a maximum variation of + or - 4% on time for a standard 1541, however the times for formatting were better by 100 - 300%, but who buys a drive strictly to format disks. I would estimate that most people I know use their drive to load programs 98% of the time. □



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Amiga graphics and the PAL television system

by Dennis Nicholson

THIS ARTICLE is designed to be of interest to Desktop Video and graphics users who are using the Amiga to further their artistic talents.

It includes reviews, (or should I say my own experiences), with several of the Amiga graphics-related packages, including *Deluxe Paint II*, *TV Text*, *Express Paint*, *Videoscape 3D*, *Digi-Paint* and *Digi-View*.

One of my little business off-shoots is producing graphics for corporate, training and documentary film/videos.

So why did I purchase an Amiga? I couldn't afford a Cray! The 1000 seemed a Godsend. So with a second disk drive and 512k installed I began creating all these wonderful images. But now, two years and \$12,000 later, (yes, that's how much I've spent on the thing!), I'm now running a 2000 with four megabytes and heaps of graphics related software and hardware.

NTSC problems

As you all know the Amiga was designed in America, by Americans for the American market, and thus, any graphics facilities it was to contain were made to work on their television system, NTSC (justly nick-named "Never The Same Colour"). NTSC only uses 525 lines on screen to our 625 line system (PAL), or more correctly, the German PAL system. It seems somewhat ironic that the Amiga was originally manufactured in Germany for the world market.

Back to the NTSC problems, the obvious happens when you show a picture designed with the American Electronic Arts *Deluxe Paint* software, you run out of lines at the bottom of your PAL screen.

When a job came along last year for me to produce 32 computer graphics for a

"How to Wind Surf" film it became quite a problem to manufacture the required full PAL screen images using *DPaint* version one, as the graphics had to end up on one inch video and be full screen.

The final result was 32 Hi-Res 16 colour images all full screen, but the only way to obtain that result at the time was to Kine, (pronounced Kin-e) all the graphics. That is, I filmed the Amiga 1081 monitor with a 16mm camera. When running a camera at 25 frames per second, (the Australian television standard) you are able to lock the phase bar out of the screen image.

What is a phase bar, you ask? If you have ever photographed a television screen at a shutter speed faster than one 30th of a second and looked at the end result you'll know what it is. A black line appears across the screen due to the fact that your camera shutter has opened and closed faster than the television set is able to scan down its full 625 lines of image, so some parts of the picture are blacked out. By running a motion picture camera at 25 frames per second the bar is stabilized and can be hidden at the top or bottom of the screen. Running at any other speed will cause the bar to roll.

By zooming in the camera lens to bypass the blank section at the bottom of the NTSC image on my monitor, and then designing the graphics to fit the remaining TV safe area, was the only way I could overcome my problem. The final image held up extremely well, even on a video projection system. But with tripping over tripods, darkened rooms and guessing exposures it was a very messy way of getting to the end result.

Animation

I will attempt to describe the prob-

lems of using the Amiga for creating graphic images and dumping the final masterpieces to video. But first I'll take a step back to outline what animation is all about, that is, the way Walt Disney has done it for the past fifty years.

As mentioned previously, one second of film time on television uses 25 frames, so for an artist to sit down and draw 25 pictures onto clear acetate sheets, (cels), for a film running 90 minutes does take a little time, 90 minutes = 5,400 seconds x 25 = 135,000 drawings! An animated television commercial, such as "Life Be In It" using the "Norm" character runs 30 seconds, thus still requiring 750 individual drawings.

Just to give you an idea of cost, six years ago such animation production was charged at \$500.00 per second, so the final cost for thirty seconds was \$15,000.00. Let me just say that production costs have tripled since that time.

Back in the early 1960s a smart young college professor, John Whitney, produced what are now to be considered the first computer animations. Basically they were strange-shaped coloured objects bouncing around the screen. The industry that arose from such beginnings has forged ahead at a great rate of knots to what you see today. Fantastic television and film computer graphics.

The Cray

Just have a look at two films, *The Last Starfighter* and *Tron* if you want to see state of the art computer effects. To create such visual delights, in the case of *Starfighter*, it took a Cray X-MP computer, 64 people and 18 months to come up with the final 25 minutes of computer animation seen in the film. Digital Productions who owned the Cray were charging \$2,000US per second of screen time.

Just to give you some idea of what's in a Cray read on. It contains over 200,000 microchips, 67 miles of wiring that chew up 100,000 watts of power, a built-in freon cooling system to keep its circuit boards at a constant 68 degrees Fahrenheit. It weighs seven thousand kilos! Mind you, it's a rather powerful little beast, standing only six and a half feet high. The time it takes to perform its most fundamental operation is, wait for it, 9.5 Billionths of a second! To purchase the X-MP, (that's if the US Defence Department let you own one), will set you back about twenty million dollars!

Using Amigas

Back to less viable bank balances and Amigas. There are several problems concerning the dumping of images to video. The major NTSC hurdle has now been overcome with the introduction of PAL

graphics software, but there are still glitches for us "big video" users. If you have guessed it to be resolution go to the head of the class. The old adage applies, you only get what you pay for. In the Amiga's case you get 640 x 400 resolution as the maximum. (Incidentally, it's not really 400 horizontal lines, it is only 200 being interlaced).

As mentioned, broadcast television requires 625 lines, but graphics for that medium need to have a starting resolution of 700 lines to be in the race, double that and you can call yourself a professional. So low (bad) resolution is pretty obvious when compared to the big guns, but there are many and varied tricks that can be done with the Amiga and its graphics software to seemingly cheat its resolution.

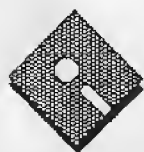
Hints

I'm not going to reveal some magic

glitch in the machine that allows you to run at 3000 lines, it's really a matter of planning and common sense as to how you manufacture your final graphic image. The following are only suggestions taken from much experimenting on my part to obtain a good on-screen look. I'm not going to get into the technicalities of how an image gets to the Amiga screen, I'll leave that to the techos out there.

One mistake people tend to make when producing computer graphics is simply to make them look like computer graphics. Bright razzle-dazzle colours combined with fonts that read like a bowl of spaghetti. Imagine a bright red ball on a bright blue background with green Topaz eight lettering on a high resolution screen, if the flicker doesn't get you your crossed eyes will.

There are some colours that just do not work well with the television sys-



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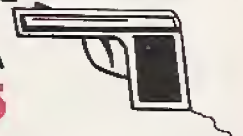
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tem, red is the major offender. Next time you see any graphic on television using red lettering jump up and take a closer look at it, the edges will most likely be bleeding into the surrounding picture area. Now, I can't tell you not to use red, but tone it down, make it pale red by using the palette's saturation control.

All the graphics I create are produced by looking at them on the Amiga monitor's CVBS (Composite) setting. What you see on the RGB setting as far as true colour and area size goes is about 75 percent different from what you will get once the image is recorded to video.

The RGB setting hides a lot of problems that will show up on a standard television set. By using the CVBS mode I am actually seeing exactly what everyone else will see when the final product is aired.

Centring the image

Also the physical placement of an image shown on a monitor using the RGB mode is different to that of the Composite mode. An image correctly centred on your monitor will be shifted to the left when screened on a TV set. This is due to RGB/Composite signal differences.

If you are using either the 500 or 2000 Amiga the only way to obtain a composite picture (apart from a genlock) is to use Commodore's A520 television modulator that plugs into the 23 pin video port of the computer. Unfortunately you will not be able to switch back and forth between composite and RGB as was possible with the 1000 machines. With the monitor switched to CVBS you are looking at the composite signals, I call it the WYSIWYG mode, What-You-Sec-Is-What-You-Get. So selecting colours in that mode is highly recommended.

Herring-bone

Which brings us to the "herring-bone" effect. An effect caused when a light colour meets a dark colour, the result is an optical illusion of a myriad of

colours merging together, and all that will show up on video. By using the saturation and hue controls within *Deluxe Paint* for example, you can significantly lessen this problem, but remember to be in the CVBS mode while you are adjusting your colours.

Instead of a black and white font make it light grey and dark gray. Or instead of red and blue make it pale red and pale blue. What you should end up with is less violent image with little or no herring-boning. Looking at your completed picture in the RGB will most likely reveal a pale water-colour picture, but forget RGB, it's the Composite image that you will record.

Anti-aliasing

Not all herring-boning is fixed that easily, there will be some that will just not go away. But *Dpaint II* has a very powerful tool to rid us of this plight. It's called "Anti-aliasing" (the ability to smooth the rough or bleeding edges). Imagine a white straight diagonal line drawn across a black screen. The jagged edge of the line is very visible against the black background. Use the "Smooth" command found under the Mode Menu. By selecting a small brush and running down the length of the white line, the contrast between the two adjoining areas is reduced. *Dpaint* finds colours in the palette between the two bordering colours and paints the boundary in intermediate shades. "Smooth" looks at the current palette and finds the colours closest to the ones under the brush. So in this case it would paint a range of greys along the edge of the line. Use this technique while in CVBS mode and you will see the jagged edges and herring-boning disappear before your very eyes. But don't over-do it, otherwise your final picture will look diffused or out of focus.

Another problem with Amiga graphic-makers who dump their creations to video is that the majority of images I have seen are not correctly sized or centred for video/TV display. There is nothing worse than viewing titles that are off-

centre, that is, lettering that is closer to one edge of the screen than the other.

Setting your monitor

I have yet to see one Amiga owner's monitor set to the correct TV standard setting. Most are usually under-scanned or over-scanned. Now don't let me tell you how to set your monitor, it is entirely up to you, but if you want to record your pictures to tape then you'll have to change a few things.

What you have to do is re-align the Preferences on your graphics software disk, (whether it be *Dpaint*, or whatever), to match the CVBS monitor mode setting. It is best to do all the following with a working copy, not your original.

With your monitor in CVBS mode boot up your copy of *Dpaint* disk and get into Preferences. Click on "Reset All", this will reset your preferences back to the default Commodore settings, so you will have to do a bit of work fixing up your mouse, CLI and printer settings etc.

The surrounding border of the Preferences screen will be more to one side of the screen than the other. With the move gadget simply re-align the borders to get the best central position within the screen area and save those settings. This still may not be as accurate as you think.

If you have fiddled with your monitor's horizontal centring knob and the other related knobs on the rear of the set, then the only successful way of finding your monitor's true centre is to have a standard television set patched into the Amiga and split the signals between the two sets. You will then have to centre the image with Preferences while watching the television set. Once centred you can re-align your monitor controls to match the TV if you wish, but this will upset your RGB monitor settings. I'll leave it up to you.

Dennis Nicholson is the Editor of GRAPHICS-PALETTE, the desktop video disk-zine for the AMIGA. □

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WordPerfect Library

by David Legard

DESKTOP ORGANISERS are by no means a new software concept, but it is not often that you get a company with the background of the US Wordperfect Corporation offering something along these lines.

Wordperfect Corporation is best known for its wordprocessing software for IBM PC compatibles and the Amiga, which is thought to still be the worldwide market leader. When a company like this turns its attention to another area of software, you expect it to turn out a fairly solid, full-featured and detailed package.

And you certainly wouldn't be disappointed on that score with *Wordperfect Library*. Among other features, it includes not one calculator but three, a powerful File Manager, Text/Program Editor, Calendar, and Database module, all of which can be highly customized to the user's taste. You might expect all this to carry a premium price tag, but distributor Sourceware is offering *Library* for \$A199.00.

Installation

Installation is simplicity itself as *Library* comes as a Workbench disk containing the five separate programs preferences and system drawers. *Library* will run on Amiga 500, 1000 and 2000 with a minimum of 512K of RAM and one disk drive. There is a separate *Library Print* disk containing various fonts and printer definitions, and the whole thing certainly becomes much easier if you have a second disk drive to hold a data disk or the *Print* disk.

Setup

As most of the customization is done within the separate modules of *Library*,

there is no need for an extended setup procedure. All that needs to be done is to select the appropriate printer.

Library supports over 100 different printers and up to six can be selected at any time for different jobs. For instance, a database report might be sent to a laser printer, while a diary schedule can make do with our dot matrix.

Calculator

As mentioned, there are in fact three different calculators - Scientific, Financial and Programmer backed up by 110 pages of documentation in the manual. Simply, this is the most comprehensive calculator I have ever seen. The calculator is large and clear on the screen, and has a pop-up list of 100 memory registers.

In financial mode these include special registers for Principal Payment, Future Value and so on. All the calculators can be used in Algebraic or Reverse Polish Notation (RPN) and contain more functions than you will find on most hand held physical calculators.

The Programmer calculator is perhaps the most interesting, with decimal to octal, binary and hexadecimal conversions, and most assembler operations such as bit rotates and shifts, logical And, Or, Xor and so on.

There is no Help feature in Calculator, but anyone who cannot use this module would not be able to use a hand held, and all the odd functions (such as SOYD and AMRT) are adequately explained in the manual.

More surprising, though, is the lack of a printing feature. It is often handy to have the hard copy of a series of calculations and it would not seem a difficult feature to incorporate.

Calendar

Library's Calendar module is based on four windows - the Calendar itself, a To-Do window, an Appointment window, and a Memo window. This seems like a rather clumsy structure - after all, what you want to know is simply what you have to do and when, without scanning all the windows. And the clumsiness extends to the general operation of Calendar, especially if you are using the mouse.

It is not enough to click on one of the windows to be able to schedule a task, but instead it is necessary to find the appropriate Add Task command from the pull-down menus. But this is compensated for by the extreme ease of moving from date to date, as the calendar itself is always on screen.

Also on the plus side, Calendar is extremely fast, and has extensive features such as warning of duplicating or overlapping appointments, alarm priority scheduling, and a comprehensive method of print formatting to obtain attractive results.

It is usually hard to justify the use of a computer calendar over a handwritten diary, but if you really did have a full work schedule to organize, you might easily use *Library's* Calendar.

Notebook

You would be much more likely to use Calendar when you had also examined the Notebook filing database module, to my mind the highlight of the *Library* package. There is nothing particularly revolutionary about Notebook - each item in the database appears as a record, and the records are combined into a list - but the ease with which you can customize your database is extremely

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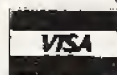
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impressive.

Drawing up database record templates and specifying field names and lengths has in the past often been a wearying and baffling task, but Notebook lets you do it all directly on the screen and obligingly moves its delimiting boxes around in response to the movements of the mouse.

It is also extremely easy and fast to change the particular record fields which are displayed on the full list of records, and sorting, searching, and matching are carried out with the minimum of fuss. Typically, Notebook contains functions such as auto-dialling, multiple choices for date formatting, and extensive print formatting capability.

Notebook makes it easy to set up a database, and a pleasure to continue working with it.

File Manager and Program Editor

These two modules can be lumped together as the oddities of the *Library* pack-

age. The Calculator, Calendar and Notebook modules are the classic desktop organizer applications. But it not quite so easy to see why end-users would be interested in manipulating files and directories or whether it should be made this easy for them.

Similarly, Program Editor is described as a programming tool rather than a straight text editor. In fact, you can produce text quite happily on it, but perhaps the company would prefer you go out and buy *Wordperfect* itself.

File Manager makes browsing and organizing the disk files structure very easy and is certainly a tremendous help to people unfamiliar with the CLI.

Program Editor is a perfectly competent if rather unexciting text/program editor with a few interesting features such as Amiga/Control keymapping and a hex edit feature.

Library

There are several features available throughout *Library* which are Wordper-

fect Corporation trademarks. The modules contain an automatic timed data back-up facility, and the ability to create extensive chained macros to automate repetitive procedures.

Perhaps more importantly, the package is inherently reasonable. It consistently works in the way that you would expect it to, and visits to the manual are few and far between. Although the modules are separate in the sense that data cannot be transferred between them, they can be simultaneously active, assuming you have enough memory.

Library comes across as a very well engineered and well produced piece of software, which will increasingly come into its own as the workload placed on it grows. And that is really the key for individual users to decide whether the package is worth \$A199.00.

Wordperfect Library published by Wordperfect Corporation, distributed in Australia by Sourceware Pty. Ltd. Unit 1, 6/8 George Place, Artarmon, NSW (02) 4277999. □

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From the bench

OUR ANONYMOUS man behind the bench of a Commcare centre, located somewhere in Australia, keeps us informed on the goings on at his posting.

A Commcare Centre requires a wide range of expertise to keep it on the air. If you think it is simply a case of fixing a few 64s and 128s, think again. Commodore started in this business with the PET, way back when, and some people still use them. We still service these machines, along with the 3000, 4000 and 8000 range.

All of these machines had their own range of peripherals including 10" and 15" printers and single, dual and hard disk drives.

Next came the VIC20 with all of its attendant bits and pieces, more printers and disk drives plus plotters and memory expansion modules.

The next item on the agenda was the ubiquitous 64. This machine heralded a veritable explosion in Commodore's range of add-ons. Who remembers the complete range of printers that have been hung on the 64? We do, we still have to keep parts for them and train new technicians to fix them.

Next up, don't forget the +4 and C16, with their unusual joystick and Datasette ports. Onward now to the 128 and 128D. More disk drives, more printers. Next stop the Amiga range complete with 3.5" drives and laser printers to add to our nightmares.

Commodore have not forgotten the business user either. The PC5, 10, 20, 40, 60 range has added to the number of spare parts bins we need and the encyclopedia of information we are supposed to remember. This list is far from complete, after all I haven't mentioned the monitors at all, but it does give you an idea of the huge range that Commodore has market-

ed over the years.

So, if you feel like starting up in the Commodore repair business just remember you could finish up trying to repair machines you've never heard of.

In order to service this ever-expanding range we employ eight technicians, each of whom has his specialities. All of them are capable of repairing whatever we throw at them, but each one seems to have gravitated towards a particular machine or range of machines and made it his own.

Take Ian Pennybridge for example. Originally an 8000 series technician, he fell in love with the 64 when it was released. (Didn't we all?) But love is fickle, and a few years later the Amiga has completely turned his head.

Icky Blue Muck

Trying to get him to work on anything but the Amiga is difficult. Trying to get him to work on a PC is well nigh impossible. MS-DOS is not his favourite operating system and any attempts to get Ian to work on Icky Blue Muck clones are usually met with the sign of the cross to ward off the evil. This from a man who reads books about self-propelled luggage and wizards with staffs of Sapien Pearwood! Give him an Amiga, preferably with lots of memory and no Sidecar, and he is in his element.

He can talk all day about the relationship between Denise and Paula (?) and the effect that Buster is having on the 2000. Ask him to speak English and you could have a problem.

Ian's offside in our little enterprise is "Slurpy" Night, Mr "Start the explana-

tion in the middle". Ask a simple question, like "Is that machine fixed yet?" and you will be regaled with a complete life history of the machine, all the diagnostics he has run on it, the parts used, the interruptions he has had to put up with and how his skiing went last weekend.

What you will not find out is whether or not the machine now works. As nobody has understood a word of this since 1985 we've given up asking. Slurpy works on the PC range with the minimum of fuss and actually seems to enjoy MS-DOS, a fact which constantly lands him with some of our worst customers.

Business users seem to think that they have some God-given right to have their machines repaired yesterday and poor Slurpy gets most of them for his troubles. We appreciate that these people are heavily dependent on their machines and always try to get them up and running as quickly as possible, but the PC is not always an easy beast to work on.

This, coupled with the fact that spare parts are sometimes in short supply, can lead to a slow turnaround in the workshop. Whilst a delay may not be critical for a home enthusiast it can cause absolute havoc in a business environment and this causes a certain amount of friction between the technicians and the customers.

Thankfully, Slurpy seems to be able to handle this and keep the lid on things at the user sites, a mixture of diplomat and technician.

Don't tell us . . .

Enough about us, time to talk about you. Can I insert here a plea on behalf of every technician in the country? Please

give us a decent fault description to work on. We do not need *War and Peace* but something more than "It ain't working proper" would be nice. Do not try to guess what the problem is, just give us the facts and we'll do enough guessing for everyone.

We had an Amiga 500 in from a dealer a few weeks ago with a note saying that the parallel port was faulty. I connected a printer, sorted out the Preferences and set to work. After about an hour of printing test patterns, text and graphics I concluded that the parallel port was functioning perfectly. I noted this on the Service Report and politely suggested that the user may have the wrong cable,

incorrect Preference settings or faulty software.

A couple of days later the machine was back, accompanied by a very nasty letter suggesting that we lift our game and fix it this time. Once more unto the breach, dear friends. Set it all up again, test it all again, and reach the same conclusion again.

Obviously there was more to this than met the eye so I called the dealer to elicit a little more information. Then the story came out. It appeared that if a printer was attached AND an external drive AND the machine was used for two or three hours it would SOMETIMES fail to reboot with the CTRL-AMIGA-AMIG keys.

Somehow this is not quite the same, is it? How this came to be reported as a faulty parallel port is completely beyond me. We found that you did not need a printer or an external drive to trip over this fault and it had absolutely nothing to do with the parallel or any other port. Some "instant technician" had filled in the Service Request and caused everyone a lot of aggravation. All we need is a description of the symptoms, not someone's interpretation of the fault.

Enough for this month, next time I intend to have a look at one of my pet (no pun intended) hates - people who don't read manuals.

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Compact Disc Technology

The New Generation

by Bernard de Broglio

IN THE MODERN world, communications and its attendant technology play a fundamental role. Television and radio, telephones and on-line databases are just a few examples of the development of the Information network.

A process which began with the oral tradition of Homer and has encompassed figures such as Johann Gutenberg, Guglielmo, Marconi and Alexander Graham Bell is now preparing itself for a new generation - the generation of optical disc technologies.

In one sense, that technology is already with us. Monash University Library and several other tertiary institutions have installed databases on DC-ROM, while others still throw money at the laser disc arcade machine, Dragon's Lair.

Yet there is a difference between the feasibility of a product in expensive high-end applications and its acceptance within the broader public. An analogy may be made between optical disc technology and the computer industry in the 1970's. It took low cost, mass produced PC's to lead the computer revolution into the public sphere.

Laser disks

The first optical retrieval system was the laser disk, made famous by its stunning use in arcade machines, and once touted as an alternative to the VHS and Beta video formats. This idea was effectively knocked back because users could not record to a laser disc. Nevertheless, films on this medium were already selling in London's Virgin MegaStore in 1987.

Laser discs were the first product of the new technology, but they are no

longer a serious alternative for the future. They are too large (30 centimetres in diameter) and the playback machines are more than expensive.

New processes in manufacturing have resulted in the 12 centimeter disc format, familiar to all CD audio buffs. This new size has been accepted as a standard and, compared to its outsized predecessor, deservedly earns the name 'Compact Disc'.

CD audio is now the acknowledged medium for the entertainment and music industry. Compact Discs outsell vinyl records and will soon completely overshadow the humble cassette as well. Forget about Digital Audio Tape.

"The DAT format is widely believed in the industry to be just about dead as a mass market machine, stifled by high costs and threatened legal action", wrote the *Sydney Morning Herald's* esteemed David Frith.

The ubiquitous music CD has a broader use in data storage. In fact, the manufacturing process is identical. 650 megabytes of text (about 300,000 A4 sheets of paper), 72 minutes of moving sequences, 7000 still pictures and 20 minutes of sound, 72 minutes to 19 hours of audio (depending on quality level) OR a mix of the above can be packed onto one 12 centimeter disc.

There is now emerging a variety of compact disc formats, designed to meet specific applications.

CD-ROM

Compact Disc - Read Only Memory (CD-ROM) is gaining ever greater acceptance as a data storage device. It is the cheapest method of storing mass information and has the advantage of brisk search-and-retrieval times.

At the moment, the costs of the tech-

nology and CD-ROM databases are prohibitive for the home or small business user. That may soon change.

Apple already have a CD-ROM player available, and Atari will be displaying their ST drive at PC 89 in March. It should be available soon after this date, according to Atari's Alistair Campion, and will cost "under \$2000". The great advantage of Atari's unit lies in its dual purpose function - the player can handle both DC-ROM and Kylie Minogue, although not necessarily at the same time.

The Atari CD unit will be able to read up to 540 megabytes of data, and - I quote from the press release - "connects . . . through the DMA (direct memory access) channel - a communications port that transmits data at up to 10 megabits per second". The same press release promises supply as from June 1988.

Other CD-ROM players are designed to work under MS-DOS. Hitachi, Philips and Sony have units now available, and Denon, JVC and Toshiba may also enter the Australian market.

Digital Video Interactive (DVI) also utilizes the 12 centimeter CD, and can offer 72 minutes of moving sequences that compare in quality to a standard VCR. Vision is compressed digitally through a two RCA- set chip. This disc is then pressed as usual.

CD-I

Compact Disc-Interactive (CD-I) must be the most exciting use of CD technology. For the first time, sound, vision, data and text, and user interactions are combined within the one medium.

Picture the school of the near future: an ancient history lesson begins with a look at classical Athens. The teacher directs the pupils to look at their personal

monitors. A quick search brings forth some information on the city from Athenian writers, Thucydides and Aristophanes. A map of Attica is called up.

The students zoom onto the city and then examine the Acropolis in 3D colour, rotating their point of view around the site, and perhaps double-clicking on specific buildings to reveal more detailed information. Battles are described with text and vision, allowing every pupil the opportunity to see the actual terrain of the country.

Imagine how this could be applied to geography, science and English studies. Imagine the games software.

CD-WORM

Compact Disc- Write One Read Many (CD-WORM) is one step towards the solution of that one problem - the inability to write data to disc. CD-WORM is used in 'in-house' electronic publishing and requires specialized encoding and recording

units. As such it is not an option for the average user.

Last year Tandy made noises about a Thor-CD format, which would allow CDs to be erased and recorded upon. I quote David Frith once more.

"The trouble is that to be successful in the marketplace, any recordable system would have to be compatible with existing audio CDs. That means getting a license from the Philips group, which is hardly likely to rush to approve a system that threatens its own interests, both in CDs and recording."

So how can optical disc technology be used right now? First of all, you'll need an MS-DOS machine (XT or AT computers, or compatibles), unless you do the unthinkable and pick up an Atari ST and CD-ROM player. Your average CD unit will cost around \$1,500 and you may need to purchase an additional hard disk or two.

Now for some software. How about 'Facts On File News Digest CD-ROM',

which offers the full text and maps of any news item appearing the 1980-1987 volumes of the 'News Digest'. A snip at only US \$695.

Or the 'Boorbank - Whitaker' database, which contains all the titles in 'Whitakers (British) Books In Print'. Information on over 500,000 book records from 13,000 publishers is yours for a subscription (one year only!) of \$2640. Other useful purchases may include the Australian Bureau of Statistics' CDA-TA86 package, which would furnish the salient facts on the 1981 and 1986 population census.

In the future, this will all get cheaper and more accessible, and the range of information on Compact Disc will increase exponentially. The Online 89 exhibition in Sydney has already witnessed an explosion in the availability of CD-ROM products.

I'm waiting for an inexpensive Amiga-specific player and Compact Disc-Interactive. I am not holding my breath.

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Computer numbers

for the newcomers to computing

by Robert Nickisson

TO NEWCOMERS to computing and regular users who have not delved deeper than the keyboard, or who have a basic dislike of numbers, here is in simple terms an explanation of numbers as they are used in the computer. With it you will gain a greater insight into the working of the computer.

This is not a lesson in Basic programming, nor in machine code programming, nor for hackers or computer wizards - they know it all.

It is on the Numbering Systems and is an attempt to explain in a limited way the usage of the systems as they are relative to the C-64 computer. It is hoped to provide the key points necessary to give a general introduction. My own maths skills are quite limited and my formal education ceased a long time ago, so if I could explore a little you can too. If you develop a knack for it you may find that exploring how the computer operates is as much fun as programming it.

Numbers play an important role in the understanding of computer operation, and it is difficult using a computer other than for games without meeting them in one form or another.

When you first switch on the C-64 numbers appear stating 64K RAM and 38911 Basic Bytes available. The C-64 contains a total of 64 * 1024 Memory Locations. All of them must be readily locatable through some numbering system that is acceptable to the operating system of the computer. These memory locations are called bytes and there are 65536 (0 to 65535) of the little devils. Not all are usable by the programmer, some contain the Operating System without which the computer would cease to function.

Whilst most hobby programming is carried out in BASIC (short for Beginners All Purpose Symbolic Instruction Code)

Robert Nickisson is a Marine Engineer by profession but has given sea travel away to work at it ashore, he is 61 and built his first computer from a magazine, Talking Electronics, single board with Z80 CPU, 2716 EPROM, 4 Address and 2 Data LED displays in the early 80's. He has a 128 now but believes the C64 is the best and cheapest unit on the market and still has his.

and we enter normal numbers and letters and symbols as we type them, internally the computer uses the BINARY Numbering System for its operation. When your Basic program is run the Basic Interpreter stored in the memory translates the instructions into binary allowing it to run.

No matter how numbers are entered into the computer they are reduced to binary for execution. Binary numbers are a breeze for the computer; they are however an awkward system for us to use in programming, as a binary number is made up of only the digits ZERO and ONE. Entering large programs in binary would be a mammoth task indeed, when you consider the multitude of Zeros and Ones it is necessary to type out and place in memory.

The numbering systems we will examine are DECIMAL, BINARY, and HEXADECIMAL.

DECIMAL is the (Base Ten) numbering system we use every day and most are at ease with it. Decimal numbers are in common usage in the C-64, our start-up message 64K RAM 38911 Basic Bytes Free in Decimal, 64K meaning 64 * 1024 bytes (65536 bytes). One kilobyte = 1024 bytes. Now the reason we need the other numbering systems:

BINARY is the (Base Two) numbering system the computer uses in its internal operation. Information fed into the

computer is stored in Binary in memory and converted to numbers and letters etc when displayed. Without Binary there would be no computer system as we know it today.

HEXADECIMAL is the (Base Sixteen) numbering system and can be really described as the bridge between the decimal and binary systems. Machine Code or Machine Language as it is also known is written in Hexadecimal because Binary numbers translate better from Hexadecimal than from Decimal.

Hexadecimal numbering system

The Base 16 System. This is the system devised as an easy equivalent of the Binary system the computer uses and reads so swiftly. Hexadecimal, called Hex for short, uses the numbers Zero to Nine and the letters A to F for a numbering system to the base sixteen.

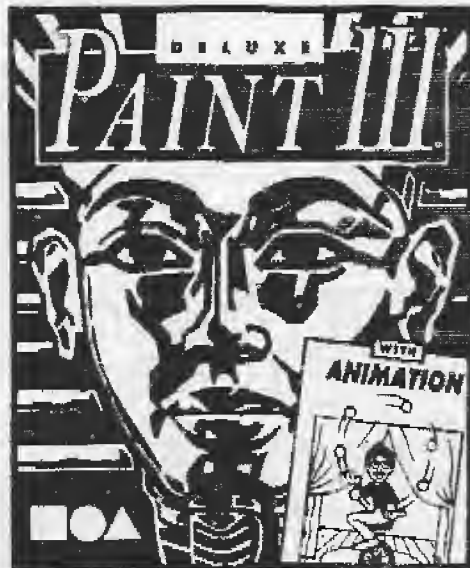
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
in the Hexadecimal equate to															
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
in the Decimal system.															

Let's relate the Hexadecimal Base 16, Decimal Base 10, Binary Base 2, numbering systems in the following Relationship Table (see Table A next page).

Hexadecimal and Binary may look a bit strange if you are using them for the first time but you will soon feel at home with them. Our next example is of the numbering systems we are discussing, you may not realise their relationship at this juncture, but you will later. The most common symbol used to tell the user that the number is indeed Hexadecimal is the Dollar sign. From now on \$ means number is Hex.

Hexadecimal - \$FFFF

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- The version of DeluxePaint III (published by Electronic Arts) that is currently being distributed is not fully compatible with Australian Amigas. It cannot do PAL animations and has problems in low memory situations.
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Table A

Hexadecimal	Decimal	Binary (a Binary Byte)
\$00	0	00000000
\$01	1	00000001
\$02	2	00000010
\$03	3	00000011
\$04	4	00000100
\$05	5	00000101
\$06	6	00000110
\$07	7	00000111
\$08	8	00001000
\$09	9	00001001
\$0A	10	00001010
\$0B	11	00001011
\$0C	12	00001100
\$0D	13	00001101
\$0E	14	00001110
\$0F	15	00001111

The Hexadecimal or Base 16 numbering System

We know that this is a Base 16 numbering system which means as we progress right to left we increase our multiplication by 16. Lets look at the large Hex number we know at present \$FFFF. This is a Hex two byte number, but what is it in decimal? Well you may ask, do I hear you say, however it's just as simple as Binary once you know how. Let's look back at our relations table (Table A). There we find that, Hex \$F equals 15 Decimal so that's a start, and we know as we move right to left from the Units place we increase our multiplier by 16.

Decimal - 65535

Binary (Two Byte Binary Number)
11111111 11111111

Notice both the Hex and Binary numbers are Two Byte numbers, don't let this confuse you. The C64 gets its information in eight bit lots, (one byte) but uses Two Bytes (16 bits) for Addresses, except for a special address called Zero Address (an address we will not be discussing) so for our purpose MEMORY Addresses are Two Byte Addresses. Decimal 65535 is the Highest Memory Address in the C64 Computer. Let's look again at Binary and this Byte, Bit, business.

We have a Two Byte Binary Number ic: 11111111 11111111 (16 Bits)

We have a Byte Binary Number ic: 11111111(8 Bits)

We have a Half Byte Binary Number ic: 1111 (4 Bits) also called a Nybble.

But how do they relate to Decimal and Hexadecimal? Let's use the BYTE 00001111 as our starting Binary number.

If we look back at our relation chart we see, Decimal 15 = 00001111 Binary but it's only the half byte that counts. We know that the Binary system is a Base Two system of numbers which means that as we progress right to left our multiplication doubles.

Decimal 15 =	0	0	0	0	1	1	1	1	our binary number
	*	*	*	*	*	*	*	*	multiply by
	128	64	32	16	8	4	2	1	the multiplier
Decimal 15=	0+	0+	0+	0+	8+	4+	2+	1	add together equals 15.

Now lets look at this Byte 11111111 what is it in decimal?

Decimal ? = 11111111
it equals 255 decimal,
you should have no trouble working that our for yourself.

\$F	F	F	F	our Hex number (and \$F=15)
*	*	*	*	multiply by
4096	256	16	1	the multiplier

Let's now look at our two byte number 11111111 11111111 — what is this in decimal? When we have a Two Byte number we call the right hand Byte the Low Byte and left hand Byte the High byte, we work out both and add them together. We know from above that the Low byte EQUALS 255 decimal, let's work out the High Byte and add it to the Low Byte. The High Byte works out to

	1	1	1	1	1	1	1	(high byte)
	*	*	*	*	*	*	*	multiply by;
327	8	6	?	?	?	?	?	256
you can work out the other multiplications.								

be equal to 65280 Decimal so High Byte + Low Byte = Low Byte = 65280 + 255 = 65535 Decimal.

11111111 + 11111111 = 65535 Decimal and is also the Highest Memory address in the C64. Are you starting to understand the Binary Numbering System? Good, then we will look at the dreaded Hexadecimal System.

Do you see how we get these numbers? (4096 is 16*16*16) Right. (256 is 16*16)

15 15 15 15
* * * * multiply by;
4096 256 16 1 the multiplier
61440+ 3840+ 240+ 15 add together
= 65535 Decimal so \$FFFF equals 65535 Decimal the Highest Address in the C64.

So all our examples equate to each other and are just another way of referring to the Highest address in the C64 Computer when using the different Numbering Systems.

Now the POINT of the matter, WHY does the Hexadecimal System (Base 16) make it easier for us to relate to the Binary (base 2) System, the actual operating system of our computer? The answer is in our original relation table if you can see it, at least it's half in it. Answer . . . Because it gives us a numbering system of SINGLE figures and letters of 16 numbers (0 to 15) DIRECTLY related to the Binary Half Byte. The Computer recognises Zero as a number (I keep telling you).

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AMIGA 2000 from Commodore S M A R T E R .

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meaning it accepts its information in Binary eight bit segments called Bytes.

The Byte can store a number in Binary of from (0 to 255), let's suppose the Byte we are using has a binary reading 00001111. From our relation table we know that this byte we know it is really only a half byte, equals 15 decimal and \$F (Hex) ie; 1111 = 15 and = \$F.

Now the Half Bytes from 0000 to 1111 ie; (0 to 15 Decimal) will allow us to enter any number in binary of from 0 to 15 (16 numbers) AS WILL the Hexadecimal numbers 0 to F (16 numbers) so we can RELATE them directly. The important thing about Hex is that it condenses a nybble or four bits of the binary number into ONE Unit, and it condenses the Byte or eight bits into TWO UNITS of either numbers or letters or a combination of both in the Hexadecimal Numbering System. It is extremely important to recognise this Hex and Byte relationship. Because the Byte is the unit of memory in the computer and also the basis of its operating system. So let's state it again:

A Binary Half Byte or Nybble can represent any of 16 numbers (0-15). The Hex numbers 0 to F..... can represent any of 16 numbers (0-15). Let's look back at our relationship table and pick a number, let's pick Decimal number 12.

Our table states: Decimal 12= \$C = Binary 1100, and there is the relationship we need to understand as plain as a Commodore Joystick. Hexadecimal \$C equals Binary 1100, that is ONE letter \$C stands for the FOUR binary bits (half byte) 1100.

Memory Address Numbers

All Addresses or (Locations) are positions in Memory, call them pigeonholes that can contain ONE BYTE (eight bits) of Binary information, meaning each pigeonhole can contain just one number (at any one time) from 0 to 255 in binary. You know that 0-255 equals 256 numbers.

Another fact is that Addresses or pigeonholes in the C64 go from Decimal 0

Table B

Hexadecimal	Decimal	Memory Used For;
\$0400 to \$07FF	1024 to 2023	Screen Memory
\$? to ?	2048 to 40959	Basic User RAM
\$A000 to \$BFFF	40960 to 49151	The Basic Interpreter
\$C000 to ?	49152 to 53247	Special User RAM
\$? to ?	55296 to 56295	Colour RAM

(zero) to 65535 in Hex that is \$0(zero) to \$FFFF and except for Zero Addressing which we are avoiding at this time, use Two Bytes to describe them.

When entering DATA however into the C64 only eight bits can be used. Why? Because the C64 is an eight bit Computer and accepts its data in eight bit segments called Bytes, which you already know, so what is the largest number in decimal that can be entered as DATA? The largest number must correspond with the largest number that a Byte (eight bits) can represent and we know that number is 255.

So Data (one byte), Addresses (two bytes). We are mostly untroubled with address numbers when programming using Basic, because the Basic is automatically sent by the operating system of the computer to a special area reserved in memory for just that purpose. The system allots addresses to the program automatically according to length of lines, program length etc. The only input from us being our Line Numbers, 10, 20, 30, and so on, these numbers the system also records.

This AREA, the Basic User RAM (Random Access Memory), starts at Address 2048 and ends at Address 40949. Note the number of Bytes available 40959 minus 2048 equals 38911 - is that number familiar? It should be, we see it each time we fire up the C64, it's a part of the start up message, and this explains how it comes to be there. How many times have you ended up with a mixture of two programs, when loading a second before removing the first from memory? Realising that Basic programs are all loaded into the computer starting at the same Address explains how the second overwrites the first, that is why it's im-

portant to NEW.

NEW, as you know means typing NEW and pressing Return. This clears the memory, giving you a clean slate as it were for the next program. Here is a short list of Addresses in C64 Memory of interest to us as novices. See Table B.

It's our part Memory Map of the computer, you should examine a copy of the full Memory Map of the C64 to check out the Areas shown. There are two types of memory, ROM (Read Only Memory) that is always resident in the computer, activated at switch - on and which we cannot alter. The other, RAM (Random Access Memory), we can alter to suit our programming needs but it is lost from the computer memory when we switch off.

As we examine memory it is apparent that all 65536 Bytes have been allotted to various but interrelated tasks, either for the computer to use doing its duties or for us to use when programming. The other areas of interest are, Screen Memory, Colour Memory, and the Basic Interpreter that takes control of our Basic Program and runs it. The experts can alter some ROM with their little bag of tricks and do amazing things with the innards of the computer, we wish them well.

Let's look at the Address 49152 to 53247 we call Special User RAM. This is because it is an area set aside to store Machine Language programs etc, keeping them out of the way of our normal Basic program. It's to this Area that the Command SYS is often directed, eg. SYS 49152, this would allow a subroutine previously stored at this address to be used in conjunction with a running Basic Program. (To be continued in the June issue.) □

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Your system disks

by Andrew Baines



WITH THE purchase of your new Amiga comes two or more disks. Mine came with *Workbench 1.2*, *Extras 1.2* and *Textcraft*. *Workbench 1.2* provides all the system routines you need for the moment. It is, however, fairly full, and making up a system disk for that wonderful application you found in the Fish collection is not as simple as copying the application to your original Workbench disk.

You should always work from a copy, and keep your original completely separate, and many software houses oblige by keeping copy protection off commercial software.

To make a system disk totally modified to your specifications, it is much easier to start by simply copying your original Workbench disk and then start pulling it to pieces. This can be done either by using a copying program, or by booting Workbench, clicking once on the Workbench disk icon, selecting duplicate from the Workbench menu, and following the instructions - swapping disks if you have one drive.

WB slave

To really pull your copy of WB apart and make it into your slave, you need a directory utility, such as *DirUtil* or *Diskmaster*. There are a few available in the Fish disks: a listing is available in the 1989 Amiga Annual. Directory utilities allow you to avoid continually typing in the CLI, and ensure that you achieve your goals. Pointing and clicking is much easier and less error prone than entering each file name by hand. (Remember that if you are deleting a program that has an icon, you should delete the icon as well. The icon has the same file name with the suffix '.info'.)

Let's start with the C directory of your Workbench copy. If you never use the CLI and are a point and click fan, the C directory is not of any use to you. There are, however, a few things you should leave in it. LOADWB, ENDCLI, DIR, LIST, CD, ADDBUFFERS, TYPE, ED (or TxED if you have it), RUN, RUNBACK (if you have it), COPY, and INSTALL are my suggestions. If you are a practiced user of the CLI, you will of course know exactly what you require, but if you have never found cause for using the CLI, I suggest you delete everything in the C directory except the files listed above.

LOADWB and ENDCLI are the basic two you will need to see the Workbench screen, and all the rest I suggest you leave there, just in case you decide to interface with the Amiga through the CLI: you won't have to copy everything over then.

Hardened CLI users will of course have replaced Commodore's C directory long ago with the AmigaDos Replacement Project's ARP Commands (available from Prime Artifax on (02) 817 0011). These are written in machine language instead of C, so they are much faster. They also accept more common wildcards, and are more consistent in nature. (*Many of the ARP commands are better than WB1.3 - Ed.*)

DEVS directory

Workbench 1.3 will also have to be a consideration, although I find it too band-aid in approach. The DEVS directory is another area where we can create some disk space. You will notice that the DEVS directory has another set of directories inside it. Move to the PRINTERS directory, and you will see a list of print-

ers. You may delete all of these except the one that matches your printer (the one you picked in PREFERENCES). Suddenly, the space on your disk has grown: the application will probably even fit. But we have only just started.

Moving back into the DEVS directory, go to the KEYMAPS directory. If you are using a Workbench 1.2 disk, you can erase the entire directory if you wish, as the default keymap 'usa1', is built into the ROM of the 1.2 Amigas. If you want to use the '()/*+' on the A500 keypad you will need 1.3's 'usa1' keymap in this directory. However, it should be noted that most commercial software resets the keymap to the ROM copy, and therefore 1.3's contribution is relatively useless.

We have now finished with the KEYMAPS directory, so it's back to the DEVS directory. Here, there are a number of files with the suffix '.device'. If your printer works perfectly through PREFERENCES, delete 'parallel.device', as you will probably never need it. Also, if you don't need access to the serial port while using this disk, delete 'serial.device'. Obviously if you are placing terminal software on this disk, you will need 'serial.device', but otherwise, feel free to make space.

Having already created vast expanses of space on your system disk, we now turn to the FONTS directory. Everything in this directory is easily deleted, unless you plan on putting a wordprocessor, TV*TEXT type program, or desktop publisher on this disk as the application. You don't need any fonts at all unless you use NOTEPAD, as it is the only program on the Workbench disk that requires fonts.

With three of the main directories already out of the way, it's time to make some more waves in the other drawers.

The L directory is very hard to change: just leave the three files there. LIBS and T are also hard to touch: I recommend you leave them alone. If you don't have a hard disk, consider erasing the Startup-Sequence.hd in the S directory.

The DEMOS have a use, but if it's not on this disk, the entire directory can go. Also, the EMPTY and EXPANSION directories are tying up space; erase them at will. The System drawer holds many programs that are very valuable to the Amiga owner, but are rarely used, so I recommend you delete all of this directory, paying attention to the links between Duplicate and Initialize in the Workbench menu, and DISKCOPY and FORMAT. You may also need SETMAP if you plan to use Workbench 1.3's 'usal' for the extra keys on the keypad.

With only one directory to go, you may be wondering why Commodore have placed so many useless files on the Workbench disk. The answer to this is that none are absolutely useless. You will use just about all of the utilities on your Workbench disk at one time or another. We are simply sorting them into two boxes: one labelled 'MOST USED', the other 'LEAST USED' (or deleted from your disk).

The beauty of the Amiga is that you may choose what suits you. Your use of a program may be heavy, while others find it does not fulfill their needs. It is all up to the individual as to how much of the disk's contents you delete. The last directory is the UTILITIES directory, which contains only two programs on 1.2: CALCULATOR and NOTEPAD. Delete them if you don't use them.

What do you need?

Finally, consider whether you really need the clock or PREFERENCES in the main directory. If not, make room. Now that we have a disk free from programs that are rarely used, we can start to fill it up with programs that you use. If you have an application, such as a wordpro-

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cessor, spreadsheet or even the simplest of text editors that you use very often and find suits your needs, now is the time to copy it to your new disk: to the main or root directory (the one with the C, SYSTEM and UTILITIES directories). After all, it deserves pride of place.

You may now be thinking that we've finished, the job is done. Not so. There are plenty of programs that make life infinitely easier that deserve to be on your disk. Again, as it is your disk, and you are the one who will be using it, you should decide what goes on your disk. I can only recommend programs to you.

Three utilities

There are three main utilities that I use on all my disks. These are DMouse, CONMAN, and either Blitzfonts or FF. DMouse has many functions. It operates in the background, speeding up the mouse pointer, making the window under the pointer the current one, pulling a window to the front if it is clicked on, blanking the pointer and screen after a certain period of inactivity, and executing a selectable CLI command when Left-Amiga and Escape are pressed together.

All options are selectable, and even if you don't have the instructions handy, typing `dmouse -h` produces a help screen. There are two files: DMouse and DMouse-handler. Place them in the C and L directories respectively. Once activated, DMouse can considerably speed up your Amiga. There are many other DMouse substitutes: Helios-Mouse, Sun-Mouse, POPCLI, MACKIE; all available on the Fish Disks.

CONMAN is the equivalent to Commodore's 1.3 Shell, and it seems to work much more easily. It allows a command history to be brought up quickly, and editing with the cursor keys. Commodore 64 users will know that moving up and editing a mistyped statement is much more efficient than having to type the whole thing again. CONMAN works on the same principle: if you press the up

arrow, the last command typed is displayed. You can then press RETURN, or edit it, or pass over it for previous commands. CONMAN is highly recommended if you hate the nasty way the Shell eats at your memory and disk space. CONMAN is three files: C/CONMAN, L/CONHANDLER and LIBS/CONHANDLER.LIBRARY.

Blitzfonts and FF both speed up your fonts, or the letters printed on the screen. Coupled with a wordprocessor or spreadsheet, one of these two can make cursor manipulation by these programs more acceptable in speed terms. FF is supplied on the Workbench 1.3 disks, whereas Blitzfonts is available in the Public Domain (my version contains no copyright notice). FF is almost twice as small as Blitzfonts, but I don't know what the difference in speed is. There are other utilities that speed up fonts in the public domain: the decision as to whether you need one, and then which one is the best is up to you.

Obviously these three are only examples, and there are many more that you may consider as necessary available free of charge. However, now that you have all the ingredients, it's time to make the pie. The way the disk behaves on insertion is the most important aspect of its usefulness. The file we now have to change is the STARTUP-SEQUENCE.

Start-up

Yes, back in the S directory, the Startup-Sequence forms a vital part of your disk. For instance, do you want Workbench running, or would you prefer your application to auto-boot? Do you wish to run DMouse, or other utilities before you start to enhance your environment? If you do, you must change your Startup-Sequence. As we have deleted most of the C directory, you will need to change this file, otherwise the system will crash when booted from this disk.

I am currently using *Scribble!*, with DMouse, CONMAN and Blitzfonts run-

ning in the background. Also, my RAM: disk has the C directory of my choice in it, and because I prefer ARP commands, it occupies only 33k of my precious memory. *Scribble!* is running without the Workbench, but a CLI window below and behind its window. The possibilities are endless. Experimentation is the only way to find the perfect setup for you.

To change your Startup-Sequence, you can use Ed, or your favourite text editor or ASCII-saving wordprocessor. My *Scribble!* Startup-sequence is listed below, to give one example of what is possible.

```
dmouse -s120 -m20 ; sets screen &
mouse blanking to 120 and 20seconds.
conman -q ; opens quietly (without a
window)
```

```
newcli Con:0/164/640/92/ScribbleII.CLI
; open a CLI at the bottom of the screen.
blitzfonts ; speed up text on the screen.
addbuffers dU: 50 ; speeds up disk access
by buffering. assign dict: sys: ; scribble!
requirement.
```

```
assign udict: sys: ; scribble requirement.
runback Scribble! ; Run Scribble! with-
out tying up the CLI. endcli >nil:
```




And of course the RAM: disk replacing the C directory is essential for speedy CLI work, even if you have two drives. At 33k, the following ARP commands are available: Delete, Dir, Cd, List, Type, Copy, Assign, Info. The ARP.library also has its own directory in RAM.

The batch file to copy these into RAM is separate from the startup-sequence so that I can choose whether I want them for a particular session or not. With all these options to choose from, you could easily have several different formats for different applications. Once again, the possibilities are endless, limited only by your imagination and the available utilities. □



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Part 2 The Amiga BASIC Tutorial

BASIC Speech and Sound

by Marco Ostini

The Commodore Amiga is a smooth talker. On many other computers voice synthesizers are an optional extra, but with the Amiga speech synthesis is built into Workbench. On Workbench version 1.3 it is even treated as a device, the same way DFO: is a device.

Using speech synthesis in Amiga BASIC is very simple. There are two commands which govern speech, they are SAY and TRANSLATE. Type this in and run it:

```
say translate$ ("Amiga's talk smooth.")
```

You may have noticed that before your Amiga parted its smooth lips it first had to refer to Workbench or the disk you booted up with to see how it is done.

SAY and TRANSLATE are two separate commands, but when used together, the TRANSLATE command translates whatever you type in between the inverted commas into phonetic text which the SAY command converts into speech. It is important not to forget to type the brackets in also, as they tell the TRANSLATE command which part to translate.

The TRANSLATE command and its contents can be summed up as a single string variable. Clear the last program out of the computer's memory and enter this:

```
a$ = translate$ ("Computers Count Quickly.")
say (a$)
```

This method can be used to make the text to be spoken more flexible, for example instead of typing this:

```
say translate$ ("Once upon a time,")
say translate$ ("there was a little Amiga,")
say translate$ ("and her name was Lorraine.")
```

```
say translate$ ("there was a little Amiga,")
```

```
say translate$ ("and her name was Lorraine.")
```

```
say translate$ ("Once upon a time,")
```

You simply type this, for the same result:

```
a$ = translate$ ("Once upon a time,")
```

```
b$ = translate$ ("there was a little Amiga,")
```

```
c$ = translate$ ("and her name was Lorraine.")
```

```
say (a$ + b$ + c$ + b$ + c$ + a$)
```

It is also possible to view the result of the TRANSLATE\$ command to see how it translates, type this:

```
a$ = translate$ ("Bashful Blitters are Boring.")
```

```
say (a$)
```

```
print a$
```

It should also be noted that the subject of phonetics is inseparably connected with speech synthesis. (Phonetics is the study of speech and its pronunciation.) The text printed out in the last program is an example of a phonetic word. If you understand what each letter sounds like on its own and in relation with other letters, then you will not only have a basic understanding of phonetics, but you will be able to make your Amiga say what you want, the way you want it pronounced. Type this in for an example:

```
say translate$ ("Rebecca.")
```

Now Rebecca is a lovely name, but when your Amiga pronounces it as Rebecca then we have to adjust the spelling of the word, so that the Amiga's smooth lips are used correctly. Try this adjustment:

```
say translate$ ("Rehbecca.")
```

With the implementation of 'eh' in-

stead of 'e' the lovely name Rebecca is pronounced properly.

Like most things on the Amiga, speech synthesis in Amiga BASIC is incredibly flexible. It is possible to make the Amiga speak in a female voice, or to change the pitch, rate at which it is spoken, volume, and to specify the kind of stereo output desired, plus other options such as giving priority to a certain SAY command so that it can override other speech at any given time. To implement all of the options available is a little bit complex, but we will cover the area fully in a later tutorial. Sound usage in Amiga BASIC programs is also quite simple, and is accessed with the two commands which are SOUND and WAVE. Clear the last program from your Amiga's memory and enter the following:

```
sound 523.25,18.2,127,0
```

After running this program you may not be overwhelmingly impressed with my musical talent, but I will now explain to you how to use the SOUND command a little more seriously.

The first number used with the SOUND command in the above program determines the note or frequency the command is to produce. The value of 523.25 for all you budding music buffs out there is equal to middle 'C'. This value can be between 20 and 15000. The second number instructs the SOUND command how long to produce the chosen note. The amount of 18.2 is equal to one second. It is possible to use numbers from 0 to 77 in order to select the desired duration.

The third number is used to adjust the volume at which the note is to be played. A value of 127 is the default amount. Values between 0 and 255 may be used to set the volume to the required level.

The last number is used to govern the

stereo channel for the note. A number of 0 or 3 will cause the sound to come out of the left speaker while a value of 1 or 2 will make the sound stream forth from the right speaker. The Amiga uses four stereo sound channels.

The WAVE command is used to actually create the sound wave to be used by the SOUND command. It can be quite complex to create a custom made wave but there is an easy way out and that is to use the SIN command.

No, the SIN command doesn't make your spotless Amiga do anything wrong, but it is actually an abbreviation of the word sine, which is a mathematical function. Sine waves are renowned for their equal peaks and troughs, making them ideal for the production of sound. In a later Tutorial, when we get into graphics, we will see what sine waves actually look like and experiment with them.

With the WAVE command, the first number represents the stereo channel to be used. The values are the same as those used with the SOUND command. The

second value will create the desired sound wave. The value must be an array of integers with a minimum of 256 elements, the elements themselves must not be lower than -128 or larger than 127.

In the following program we use the SIN command with WAVE. Clear the memory and enter this:

```

wave 0,sin
Scan:
a$ = inkey$
if a$ = "q" then sound 220.00,5,127,0
if a$ = "w" then sound 246.94,5,127,0
if a$ = "e" then sound 261.63,5,127,0
if a$ = "r" then sound 293.66,5,127,0
if a$ = "t" then sound 329.63,5,127,0
if a$ = "y" then sound 349.23,5,127,0
if a$ = "u" then sound 392.00,5,127,0
if a$ = "i" then sound 440.00,5,127,0
if a$ = "c" say translate$ ("This program
will now cease."):end goto Scan
    
```

This program creates the very simplest form of a musical keyboard with a range of an octave, and no sharps or flats.

After selecting the output window with the mouse, press any key from 'q' to 't' to hear the output. You may quit this program by pressing the 'c' key (c for cease).

You may have noticed that when entering the note amounts such as 220.00 Amiga BASIC changes it into 220!. This is only a form of rounding off and nothing to be concerned about.

We scan the keyboard in the above program using the INKEY\$ command. This command scans all the keys and detects whether they have been pressed or not. We give the output of this command the title of a\$ (although it can be anything) so that we can compare the output of the INKEY\$ command with what we are looking for. The GOTO command simply makes the program flow branch back to the label defined.

In the next Amiga BASIC tutorial we will look at the powerful debugging options available and we may even dabble with some elementary graphics. □

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Lightning Sort - a machine code sort for the C-128

by Graham Winterflood

SOME TIME ago I purchased a book of machine code programs for the C-64 because it contained a sorting routine called ULTRASORT which I was interested in using for a running club handicap program. The sort was written in machine code and was based on the Shell Sort.

Among other things the author claimed that it was probably the fastest sorting program for any eight bit machine and would sort a thousand random strings in about eight seconds, so naturally I was interested. I typed in the three pages of data statements and sure enough the sort worked as advertised, sorting a thousand randomly created strings (or words) in about eight seconds.

However something was puzzling me as I had come across a piece of public domain software earlier, namely a program for sorting disc files and it seemed that it sorted its files much more quickly, so I tracked down the disc file program to investigate. This routine for the C-128 is the result of that search.

When I checked the disc file program I found that the sort routine it used was a file on disc called L-SORT, a machine code routine which occupied only about 250 bytes of code, and when tested would sort a thousand random strings in about two and a half seconds flat. This was quite astounding so I disassembled the routine to find how it worked.

The sort was a machine code version of the SHELL-METZNER sort which explained why it was so fast. This was on a C-64, so I began to wonder if it would run faster on the C-128 which in fast mode had a clock speed twice as fast. This was when it started to get complicated. The L-SORT works by sorting the pointers to the strings, not the actual strings themselves, so when I checked the memory map for the C-128 I discov-

ered that the data for all strings as well as the pointers are all stored in bank one.

This meant that if the sort routine was in bank zero, then a lot of bank switching would be necessary, which would not only make the program longer, but would slow it right down and lose any advantage gained. So the answer was to place the sort routine somewhere in bank one. This was achieved by raising the bottom of array memory by two pages from \$0400 to \$0600. This is done in basic by a line in your program:

```
POKE 48,6:POKE 50,6:POKE 52,6
```

As it is intended to use this sort from within a basic program, the next problem was to be able to jump from the basic program running in bank zero to sort the strings in bank one, then switch back again without getting lost. A common area of memory which could be seen from both banks at once was required.

I knew that the only common area between the two banks was in the lower four pages of memory, so I searched through Jim Butterfield's memory map and found that the only possible place that was not likely to be in use was at the top end of the basic input buffer. The switching code was then placed in 26 bytes from \$0250 on.

The only other hitch was how to tell the sort routine which array to sort. This is especially important if your basic program has more than one string array in use, which most useful programs would have. This is achieved by line 340 in the sort test program:-

```
AAS(1)=AAS(1):SYS 592
```

The reason for this strange looking statement is to get the desired string ar-

ray into the current variable pointers at \$49 and \$4A and then transfer the pointers to \$FB and \$FC for the sort routine. In your program substitute your own variable names for AAS().

This was the quickest method I could devise to refer to the desired array without actually doing anything. Anyhow it works! Well, after all this, just how fast is it, I hear you ask. It will sort a thousand random strings in under 1.2 seconds. Now that is what I call fast.

There are two programs to type in to test the sort. Listing one is a basic loader for the machine code data. This is the program which must be run first, and can easily be attached to your own basic programs. After it is typed in and run you will be advised that the code is installed, assuming no mistakes in your typing, otherwise a check sum will advise if there is an error in your data statements.

Note that a Bank 1 statement is issued prior to reading in the data for the machine code. After it is read in to memory, a Bank 15 statement is issued to return the computer to its default setting. Essentially Bank 15 in basic is the same as bank zero in machine code.

Next type in and run listing two to test the sort. You will be asked how many elements you wish to sort. The computer will then begin creating that number of random strings varying in length from one to ten letters. When that is done you can hit any key to begin the sort.

The computer times how long it takes, and when the sort is complete, hit another key to see the sorted strings printed out. At the completion the time taken for the sort will be displayed.

If using this sort in your own programs the important points to remember can be copied from listing two, namely the number of elements to be sorted con-

verted to LO/HI format as in line 110, and the first element of your array to be referred to such as AAS(1)=AAS(1):SYS592, as in line 340.

It is important that this line is in your program immediately prior to beginning the sort with the next line which is:-

SYS 601,LO,HI.

If you are sorting less than 100 strings the time will be about the blink of an eye. You can't get much faster

```
1 REM-----
2 REM
3 REM PROGRAM ONE -- LIGHTNING SORT CODE
4 REM
5 REM-----
1000 FAST:POKE48,6:POKE50,6:POKE52,6:CLR
1010 FOR X = 592 TO 618
1020 READ A:POKE X,A
1030 CH=CH+A
1040 NEXT X
1050 IF CH<>3567 THEN 1380
1060 BANK 1
1070 FOR X = 1040 TO 1364
1080 READ A:POKE X,A
1090 CH=CH+A
1100 NEXT X
1110 IF CH<>39500 THEN 1380
1120 PRINT
1130 PRINT"LIGHTNING SORT CODE INSTALLED":BANK15
1140 IFRGR(0)=0THEN SLOW
1150 END
1160 DATA165,73,133,251,165,74,133,252,96,133,253,134,254,169,127,141,2
1170 DATA255,76,16,4,169,0,141,0,255,96
1180 DATA162,1,165,251,157,85,5,157,125,5,165,252,157,105,5,157,145
1190 DATA5,165,253,208,2,198,254,198,253,160,3,24,189,125,5,101,253
1200 DATA157,125,5,189,145,5,101,254,157,145,5,136,208,236,189,85,5
1210 DATA133,80,189,105,5,133,81,189,125,5,133,82,189,145,5,133,83
1220 DATA32,21,5,144,11,202,208,228,169,0,133,248,76,101,2,234,165
1230 DATA82,133,78,165,83,133,79,160,2,177,78,153,250,0,136,16,248
1240 DATA48,11,24,165,80,105,3,133,80,144,2,230,81,160,2,177,80
1250 DATA153,247,0,136,16,248,32,32,5,144,230,56,165,82,233,3,133
1260 DATA82,176,2,198,83,32,21,5,176,31,160,2,177,82,153,247,0
1270 DATA136,16,248,32,32,5,176,225,160,2,177,80,145,82,195,247,0
1280 DATA145,80,136,16,244,48,183,160,2,177,80,145,78,185,250,0,145
1290 DATA80,136,16,244,24,189,85,5,125,125,5,133,82,189,105,5,125
1300 DATA145,5,133,93,102,83,102,82,32,21,5,176,22,189,85,5,157
1310 DATA86,5,189,105,5,157,106,5,32,53,5,232,32,69,5,76,64
1320 DATA4,189,125,5,157,126,5,189,145,5,157,146,5,32,69,5,232
1330 DATA32,53,5,76,64,4,165,81,197,83,208,4,165,80,197,82,96
1340 DATA160,255,200,196,247,176,11,196,250,176,6,177,248,209,251,240,241
1350 DATA96,196,250,96,24,165,80,105,3,157,85,5,165,81,105,0,157
1360 DATA105,5,96,55,165,80,233,3,157,125,5,165,81,233,0,157,145
1370 DATA5,96
1380 IFRGR(0)=0THEN SLOW
1390 PRINT"ERROR IN DATA STATEMENTS"

READY.
```

than that.

The only drawback of this routine is that it takes longer to sort a list which is almost sorted already. But most routines take longer than anyway. Those of you running your C-128 in forty column mode will still have the sort working in fast mode. The screen will blank while the sort is in progress then will switch

back to slow when completed.

Now if anyone out there has a faster sort than this, I would like to know about it. In future articles I will present some sorting routines written purely in basic for those of you who do not wish to complicate things with machine code. The difference in speed is quite remarkable. ■

```
1 REM-----
2 REM
3 REM   PROGRAM TWO - C128 SORT TEST
4 REM
5 REM-----
100 INPUT"NUMBER OF ELEMENTS TO BE SORTED";N
110 HI=INT(N/256);LO=N-(HI*256)
120 DIMAA$(N)
130 PRINT"CREATING"N"RANDOM STRINGS"
140 FAST
150 FORI=1TON
160 PRINTI;CHR$(145)
170 N1=INT(RND(1)*10+1)
180 A$=""
190 FORJ=1TON1
200 B$=CHR$(INT(RND(1)*26+65))
210 A$=A$+B$
220 NEXTJ
230 AA$(I)=A$
240 NEXTI
250 IFRGR(2)=0THENSLOW
260 PRINTCHR$(147)
270 FORI=1TON:PRINTI,AA$(I):NEXT
280 PRINT
290 PRINT"HIT ANY KEY TO START SORT"
300 GETKEYA$:PRINT
310 PRINT"SORTING....."
320 FAST
330 T1=TI
340 AA$(1)=AA$(1):SYS592
350 SYS601,LO,HI
360 T2=TI
370 IFRGR(2)=0THENSLOW
380 PRINT
390 PRINT"DONE"
400 PRINT
410 PRINT"HIT ANY KEY TO PRINT SORTED STRINGS"
420 GETKEYA$
430 FORI=1TON:PRINTI,AA$(I):NEXT
440 PRINT:PRINTN" ELEMENTS SORTED IN"(T2-T1)/60
    "SECONDS"
READY.
```

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Basic BASIC, a tutorial for beginners - Part 5

by Oben Candemir

WELL, WE'VE COME a long way since the first issue and I hope that the learning curves are soaring! The title of this article is now becoming a little untrue, because it's really not for absolute beginners anymore, so next month I'll call the column simply 'Basic BASIC' — don't get confused.

This month I hope to broaden the scope of the articles from just BASIC to include programming techniques in general; I'll begin this month trying to introduce a broader scope into the 'course'. However I do want to cover arrays and their implementation in BASIC. Programming technique and a discussion of them will conclude this month's instalment.

Arrays

Arrays are simply linear variables which can be subscripted with a number. If you aren't completely with this then don't worry, the practical side of arrays makes them quite straightforward.

For example say that we wanted to store a school timetable in memory. A natural way to do this would be to store in variables named 'MONDAY9\$', 'MONDAY11\$', etc. the names of the lessons on 'MONDAY' at '9' etc. But the management of all these variables will quickly become frustrating and practically impossible if two or more timetables had to be kept.

Can you think of a good way to do it? With ordinary variables you'd be forced to adopt an algorithm such as that discussed. But arrays provide a more disciplined way of managing this type of data.

An array is what it says it is, it is an 'array' of variables which can be called

with the same name but different numbers. A normal variable is stored like this in memory:

```
Variable Name:
'A'
|----|
| 5 |
|----|
```

What this represents is that the variable 'A' is like a 'box' in memory and only one value can be kept in it. An array is like this...

```
Array Name:
A(0) A(1) A(2) A(3)
|----|----|----|----|
| 5 | 10 | 3 | 7 |
|----|----|----|----|
```

What we have then is a four membered array A(x) where 'x' represents the subscript of the array. This array is arranged in a sequence in memory so that there are four sequential boxes in memory which will hold the 'members' of this array.

Assigning values to array members is done like ordinary variables. Example if I wanted to assign the sixth member of the array B() the value 100 then I'd go about it like this: B(5)=100. Does everyone get the point with the (5)? Remember that B(0) is also counted! Therefore B(5) is the sixth member in case you were confused.

Arrays are not restricted to numbers. We can just as well have a variable named A\$. The normal string assignment rules apply. Now that we know what arrays are exactly, we can set about the question of how we use them.

Arrays must be declared or 'dimensioned'. Arrays with up to 10 members can be used without declaration,

but anything (and I mean anything) over 10 members must be declared with the DIMension command. I now give an example, say we wanted to use an array called ACAR\$() with 100 elements; We could do it like this:

```
10 DIM ACAR$(100)
```

This is to be done only once in a program. Should it be re-dimensioned then the BASIC interpreter will give you a very rude message! For this reason, you should make it a firm rule that all arrays are to be dimensioned at the very start of the program and this line is never to be re-executed in the program!

Arrays aren't limited to single 'dimensions' though. We can have a multi-dimensioned array which means that instead of having data stored in a straight line in memory, we'd have it arranged in a rectangle for a two-dimensioned array and a cube (representative of course) for a three-dimensioned array. Four dimensions are very rare but by no means impossible, you might want to program an application which takes Einstein's space-time duality into account?!

Multi-dimensional arrays are declared like this:

```
10 DIM ACAR(100,50)
```

What this would set up is ACAR with 101 elements and those elements would have another 51 attached to them. So that ACAR(1,1) ACAR(1,2) ACAR(1,3) would all hold information. This array would be equivalent to using 5151 single variables, but in a more ordered way!

Here is a program to clear all the members of the previous array to all zeroes.

```

10 DIM ACAR(100,50)
20 FOR A=0 TO 100
30 FOR B=0 TO 50
40 ACAR(A,B)=0
50 NEXT B
60 NEXT A
70 PRINT"ALL DONE!"
80 END

```

And yes! The subscripts for arrays themselves can be variables! Pretty nifty eh? In fact that's what makes arrays so useful. Say you wanted to search for a piece of stock in a shop and you've already written a program to store all the stock in an array called STOCKS. Then finding what the 105th piece of Stock is, is easy, as the user could be asked to type the number of the stock, this would be put in a variable and then used to subscript the array and hence find the name, quantity etc. of the stock!

In this way we can make a very concise and useful version of the timetable program by using arrays. Let's say that MONDAYS(,) was the array to be used for Mondays lessons. TUESDAYS(,) for Tuesdays, etc. Now, the lesson number would correspond directly to the first subscript. And then the information for the lesson and its time would be stored sequentially. So that, if Monday's first lesson is Physics and it starts at 11:00 a.m then MONDAY\$(1,1) would contain "Physics" and MONDAY\$(1,2) would have "11:00 a.m" in it. The second lesson, ie. MONDAY\$(2,x) would hold similar information about the second lesson.

Therefore we are spared the need to look for different variable names and the pain of searching for a decent method to find the data; because arrays have these inbuilt qualities.

I hope that I have adequately explained the concept of arrays, because they are very central to good programming technique which I'll now comment on further.

Programming technique

There are different 'schools' of programming. Each of which dictate and recommend different ideologies on what the 'perfect' (if there is such a thing) techniques. There are mainly three different schools.

The first is the one which says that a program can and should be written 'over the computer', using whatever methods so long as the final code works. This means that GOTO is used frequently and code may be all over the place. The main members of this school are novices and inexperienced programmers; but this type of programmer is now a dying breed because the computer users base is growing more experienced. Leave this type of programming for the inexperienced!

The second is the school of modularity, which preaches that all code should be simplified into very small sections/subroutines which are called by a mother or main routine. Programming languages like 'C' are based upon this idea totally. This method is good because code is easy to debug, is quick, but has the drawback of requiring more time to read and maintain.

The third school is the one which preaches 'top down' design. This means that GOTO is a taboo and not allowed. This means that clever approaches have to be thought of to get around the use of GOTO. Theoretically all code should be able to be designed top-down but in practice this is hard to do. Therefore top-down code is easy to read but very time consuming to do.

All I can say is that I use a mixture of the last two, using one when the other seems impractical. Exciting isn't it?

Tips and hints

When programming try to keep your code as flexible as possible. One tip that I can give is that you should try to avoid what is called 'hard coding'. Which means that values are explicitly put in. Example:

```

10 PRINT 6+4
20 PRINT 6*7
30 PRINT 6*9+9

```

The value six has been hard-coded. Later on, after you've typed nearly fifty of these, if you find that you've read incorrectly the program and find it's supposed to be 8 then you're in for a massive cleanup! Whereas if the variable 'SIX' had been declared at the beginning as six and used in the program in the place of '6' then it would require only changing one line in the variable declaration to change all the values. Example:

```

10 SIX=6
20 PRINT SIX+4
30 PRINT SIX*7

```

When we found the mistake all we need do is:

```

10 SIX=8 : REM *** See the Change!
***
20 PRINT SIX+4
30 PRINT SIX*7

```

Pretty handy isn't it?

Anyway, keep slogging it out with the BASIC interpreter and I'm sure that one day you will conquer it. Look out for next month's issue, I'll explain some miscellaneous techniques etc. which I've picked up in my time.

Bye!



Adventurer's Realm

by Michael Spiteri

GREETINGS ALL! I welcome you once again to the dark and mystic caverns of The Realm, Australia's only adventure column dedicated to those who ponder strategy on all Commodore computers.

If an adventure is seriously affecting your health to the point where you cannot sleep, then send in your dreadful dilemma to the address below, and I'll see what I can do. If I cannot help you, then I'll exhibit your problem for all other adventurers to ponder on. Don't forget to enclose a stamped-addressed-envelope !!

*Adventurer's Realm
1/10 Rhoden Court
North Dandenong
Victoria 3175*

If you're stuck in the middle of World War IV, then resident expert wargamer Barry Bolitho will most likely reply to your needs. Just mark the envelope "Wargame Section"

Finally, all you role-players, you are not forgotten. We have the likes of Kamikaze Andy to help you out in his mystical dungeon. All role-playing-game queries should be sent to:

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The Realm's big no - no

Many of you who read this article are probably unaware that my current full-time work has me working different shifts over 24 hours. So please think twice when contemplating ringing the Realm - I can be very hostile if I'm woken up from a deep sleep!

Realm's Free Hints Sheets

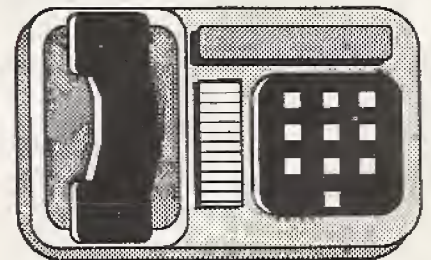
The following hint sheets are available free of charge from the Vic address. Note: because of some greedy little adventurers, there is now a limit of FOUR hints sheets per person. If you want more, you have to write twice.

- Bards Tale 1,2,3
- Zork 1,2,3
- Dracula 1,2
- Hitchhikers Guide to the Galaxy
- NeverEndingStory
- Adventureland
- Borrowed Time
- Hampstead
- The Pawn
- The Hobbit
- Lord of the Rings
- Castle of Terror
- Pirate Adventure
- Faery Tale

Make sure the envelope you enclose is big enough to contain the hints sheets.

Psst! Coming next month

Next month in the Realm I'll announce the opening of yet another Official Realm Bulletin Board, this time for the glorious state of Victoria. Watch this spot!



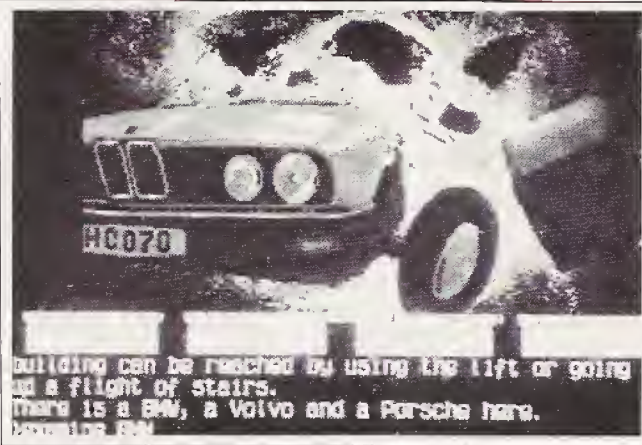
Corruption

by Magnetic Scrolls/Rainbird

At last, a totally original and exciting adventure that doesn't send you out rescuing damsels and slaughtering dragons. In this adventure, the only thing behind you'll be saving is your own (hopefully).

In *Corruption*, you take the role of David Rogers, a smart business-man who has just become a partner in a new broking firm. You've been supplied with a flash new BMW, a new office and a new secretary. Everything is just spiffy, that is, until you decide to do a bit of eavesdropping, and words like "affidavit", and sentences like "David musn't find out!" start attracting your attention. Something's not on, and it's up to you to find out what. What do your partner Derek and the company lawyer have up their sleeves? Don't trust anybody, that's my advice, or you'll find yourself arrested or even dead meat (to coin a phrase).

Timing is a crucial factor in this adventure, and listening in on the right phone calls and being behind the right doors could make the difference between completing or not completing the game



successfully.

There is a host of characters for you to chat to, ranging from your bossy secretary Margaret, through to the nutty doorman. Keep an eye on Derek, and note his movements carefully. Your BMW may be a nice looking vehicle, but one of the parts might have come from the IRA, so get out as soon as it starts playing up. Also check out the contents of the Volvo parked next to you.

So that's the plot. How does the game play? Well, I think I am safe in saying that Magnetic Scrolls have finally outclassed Infocom in all areas. The par-

ser is fantastic, probably the easiest I have ever used, and the vocabulary is just as good. Very rarely did my entry get a reject, and communicating with other characters was just a breeze. The text descriptions were bursting with atmosphere, as were the very detailed graphics, which are 100% better than predecessors *Pawn*, *Jinxter* and *Guild of Thieves*.

Documentation is also excellent, with enough cryptic clues to last a lifetime, and enough background information to get you started. An audio tape is also included with theme music and dialogue, which can sometimes be hard to follow, but nevertheless, sets the scene for an exciting adventure. I think Magnetic Scrolls have finally set a standard to which by all adventures will be judged - even Infocom.

For the C64, Amiga and PC series.
Versions played: Amiga and PC.
Supplier: Questor
Rating: 99.99%
Verdict: An absolute winner!!

The Dungeon

by Kamikaze Andy

Computerised Role-playing (Part 3)

Early games such as *Ultima* and *Wizardry* set the trend for the visual presentation of today's RPG. The distinct top-down overhead view of the original *Ultima* has led to several other RPG's using the same method, such as *Questron* and *2400AD*. The first-person view of the initial *Wizardry* has also seen some imitators, including the highly acclaimed *Dungeon Master*. The advancement in graphics quality in recent years does mean that although new games may pattern themselves on old concepts, no one really notices and no one really cares too much about it.

The emergence of the *Bard's Tale* ser-

ies saw the creation of a new kind of perspective. The use of a small graphics window (in first person 3D perspective) and a larger textual representation has been widely copied in recent RPG releases, including the best selling *Pool of Radiance* and the soon to be released *Hillsfar*, both in the official *Dungeons and Dragons* line from SSI.

Faery Tale adventure introduced yet another method of presenting RPG's in a computerised medium, which was through a graphical 3D forced-perspective, much like an arcade-game. Once again, other RPG's have been quick to imitate, Origin's *Times of Lore* being

the first.

Each of these perspectives have their various advantages and disadvantages, and most are particularly suited to their respective role-playing themes. Can you imagine *Bard's Tale* in an *Ultima* perspective? Some games have tried to combine the best of both worlds, and *Wasteland* uses this approach. In this case, the combination works very well, mostly because *Wasteland* has such a great storyline.

As more and more RPGs are released over coming months, I am sure that we will see many new means of bringing the exciting world of role-playing into your local computing screen.

The Demented Adventurers Dept (or...Problems, Problems, and moreProblems)

Yes folks, it's that part of the Realm where all the manic adventurers come out of the closet and burden all the clever adventurers with endless mountains of hair-pulling problems. If you can help someone, please do - as soon as possible.

Let's start the ball rolling with Peter Nuzum of Lara in Victoria. Peter is one of many being teased by the adventure pack included in the Commodore Pro-Pack. These are his problems....

Temple Curse: Unable to get onto the boat to cross the pool.

Island of Spies: Unable to move the truck after starting the engine.

Lost Planet: Cannot proceed further than the Ice Cavern.

"HELP!" writes a character called Severian, a plea often cried out among adventurers. *Arazoks Tomb* is the game this time that causing anxiety. He/she writes "I have encountered a character called Zud who not only blocks my path but no matter what I do, he kills me!"

Can anybody help Severian get past Zud?

Level 9 adventure games are causing concern this month. Mathew Hampel is stuck in two! Firstly, in *Adventure Quest* (from the *Jewels of Darkness* trilogy), when crossing the desert, how do you stop getting killed by the sandworm. Then, in *Lords of Time* (from the *Time*

and Magik trilogy), how does Mathew achieve the very basic task of entering the garden shed?

David Maish is in the habit of annoying the Realm during his lunch break. *Shadowgate* is the game that is causing problems with David, and a particular fire-room has brought his progression to a halt. Any takers for this puzzle?

Sometimes a simple clue is not enough for some adventurers, especially the younger ones. Take the following letter for example....

Dear Sir,

If you wish to save a certain 14 year old from dying of frustration could you please tell me what is the phrasing for the Hobbit to escape from the goblin's dungeon. I have had the basic idea of escaping explained to me - get Gandalf or Thorin to carry you through the window - but I cannot get the correct phrasing. This is for the C64 disk.

Well, Carey Hulme is the unfortunate Hobbit, and if anybody can help him I am sure it would be most appreciated!!!

A character called Dumpy has written to the Realm (a better name couldn't have been chosen considering the number of problems dumped into the Realm's offices). "I have a few problems . . ." he/

she writes. Well, here they all are ;

Legacy of the Ancients: How can I get some of the other coins? I already have the storne key from the castle, where is the other key? How can I find the Pirates' Lair on one of the Three Sister islands? Are there any other better weapons and armour that I can get or am I limited to what I already have (knife, staff & club)? The magic seeds, I know, make me invisible, but any hints or ideas on their use would be great!

Might & Magic: I don't know if there is an end to this game or not, but any help with it would be appreciated.

Guild of Thieves: I have entered the castle, and had a little look around but I can't work out how to get past the guard.

Grant Scott of Gymga in NSW is another person stuck in *Shadowgate*. He asks the following questions...

- What is the skeleton key used for?
- How do you reach the elevated exit in the chamber?
- Where is the torch that kills the wraith?
- How do you ride the broom without breaking your neck?

Finally, Rob Curtis and his mates are having a frustrating period in *Police Quest* with Sweet Cheeks - the helpful call girl. Apparently Sweet Cheeks has been as helpful as possible, but is not absolutely easy to get rid of - safely. Any police past this point?

Help for Troubled Adventurers (or...The Smart Adventurers Dept)

Well, all diseases in the Realm have a cure - finding it is just the problem. Below are some cures to two diseases printed a few months back. Thanks to all who contributed to help these poor, sick adventurers.

For: Nick Van Heeswyk

From: Beverly (*The Beaver*) Deegan

Help: Adventure Castle sounds sus-

piciously like **Castle of Mydor**, so the following will only work if this is true...

(GO FIREPLACE) after entering the castle. Don't forget to (PUSH LEVER) also, (MOVE ASH) and get what you find, take it to the fountain and drop it - you will then find something to stop you going batty! (READ BOOK) several times for hints. Also, for backward mag-

ic, SAY the word that got you into the castle to start with - backwards.

For: Craig Blackberry

From: Many adventurers, including Grant Scott, and David Maish.

Game: Shadowgate

Go to the waterfall, go to crevice behind waterfall, operate thyself on rock sticking out of wall. Drag bag found into inventory, go to the pedestal room, open bag, operate white gem in hole near doorway, take blue sphere which appears on pedestal, go to lake, operate sphere on lake.

Realm's Super Tips - Part 3

More hints and tips to keep adventurers happy...

Red Moon

Courtesy C. Holmes, Burringbar NSW

- Wear the gloves to get the sword.
- Eat the mushroom to enter the secret cupboard.
- Wear linen shirt to wear chain mail.
- Put pills in meat and give to dog.
- Obis open sarcophagus.
- Ollabin turns mummy to dust.
- Rub out red line to cross.
- Play dulcimer to entertain bostog.
- Wear braces to carry more.
- Wear rubber boots to enter metal room.
- The ring makes you survive battles longer by making you more agile when worn.

Bureaucracy

Courtesy Kamikaze Andy

In House

- Wait around until the delivery man arrives and pay him with your beezercard.

Outside Farm

- To feed the hungry llama, open the mailbox and put the goodies through it. Remember to get the farm mail, and not the alphabet on the sticker.

Old Woman

- Make sure the porch door is open - enter via the alley.

- Knocking on the front door distracts the hag. Run around to the back and enter the house - get everything quickly.

The Macaw

- To get the mail, show the painting to the macaw.

The Bank

- The solution to getting the \$75 is to deposit your cheque with a different slip. You then alter your bank total and are able to withdraw sufficient fund for a cab ride to the airport.

Airport

- Find the counter of the airline noted on your ticket to change your flight to a new improved Air Zalagsa. To find the new counter, wander around the concourse until you find a sign that does not advertise the airline. Go north.

To get on plane

- Climb up the tower with the speakers, remove the grate, and go up until you reach the air-control tower. Ask the controller to deny the plane permission to take off, then get out quick!!
- Disable the speakers by pulling both wires and connecting them together.

Witness

- There is nothing you can do to prevent the murder.

- Take a closer look at the clock (key-hole).
- The couch makes a good hiding place.
- Search the butler after the crime.
- Duffy can be very useful if you ask him for hints.

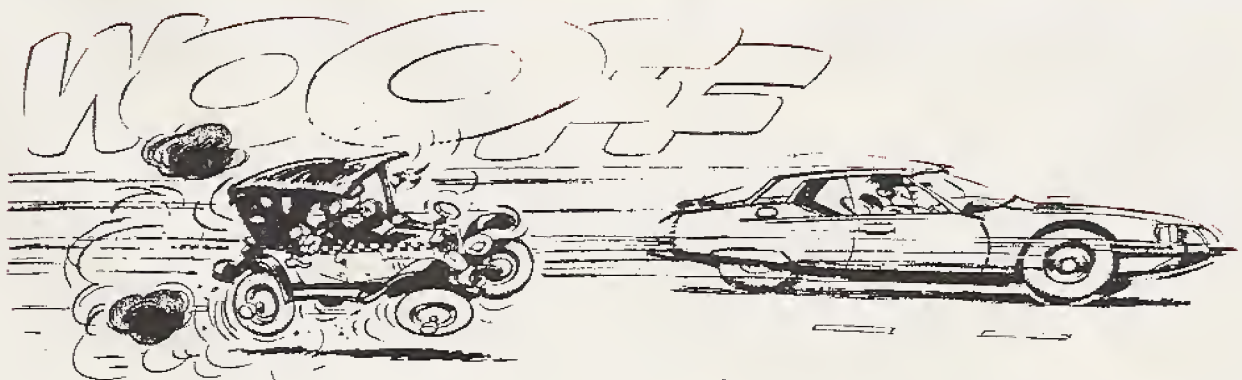
Jinxter

- At the start, show the bus ticket to the inspector and push the button after the bus passes the first bus stop.
- You'll need the iron key to open the doors in your house.
- You'll need the rusty key to open Xam's door.
- Examine Xam's dining table.
- Get past the barbed wire by holding it then cutting it.
- Patch up the canoe with the bung and the sock.
- Ask for the job in the bakery.
- Post the saddle to the depot and pay for it.
- Run after the train if it leaves without you.

Mission Impossible

- To get through the white door, push red then white.
- To get through yellow door, throw recorder through window.
- To get through blue door, kick or push hard.
- Pour water to defuse the bomb.

(To be continued...)



Guide to contributors

EVERY MONTH WE receive dozens of submissions from would be writers. For these we are most grateful. If you have considered writing for the *Australian Amiga and Commodore Review*, here's a few guidelines. The majority of contributions are accepted, however as we have a larger number to choose from these days, a few more stringent guidelines need to be met.

Style: Easy to read, entertaining and informative. We aim to be an enjoyable easy to read publication - with a smattering of technical articles for those so inclined. We are most interested in tutorials, "how to" type articles, and general hints and tips. Programs are also sought after for our disk magazines, Suite 64 and Amiga Live!

Format: Don't include any formatting such as printer controls, centred

headings, print styles etc. Put a space after commas or full stops. Do not indent paragraphs. Numbers under 10 should be typed. We prefer contributions on disk - Commodore 64/128, Amiga, MS-DOS and even Macintosh. Don't double space. Just a straight ASCII text file is all we require. We also accept contributions via modem once you become a regular contributor. Baud rates of 300, 1200, 1200/75 and 2400 are supported.

What to include: A brief letter, if it's your first effort. Your phone number - this is the most important thing! And put your name at the top of the actual article, not just on the letter.

What you get: Fame and a little fortune. Writing is a lot of fun. You'll get payment of \$50 per 1000 words - paid about one or two months after publication and a free subscription to the

magazine after your third article. We take receipt of the article as permission to publish - you may not always be contacted before we use your article.

Where to send contributions: Post articles directly to *The Australian Commodore and Amiga Review*, 23 Bonnefin Rd, Hunters Hill. Or call (02) 817-0011 to arrange modem transfers.

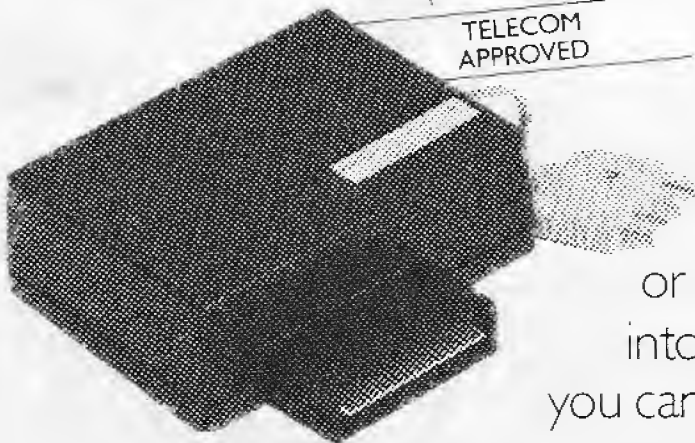
Don't send us your original - we cannot guarantee return, and it may become damaged in the post. Send 5 1/4 inch disks in an Australia Post cardboard Post Pak especially designed for carrying disks. Do *not* use padded post bags - these have a tendency to make the postman want to bend them in half. Amiga disks can just be sent normal mail.

That's it! For a more detailed version of the above, call our office and ask for the complete writers guide. ■

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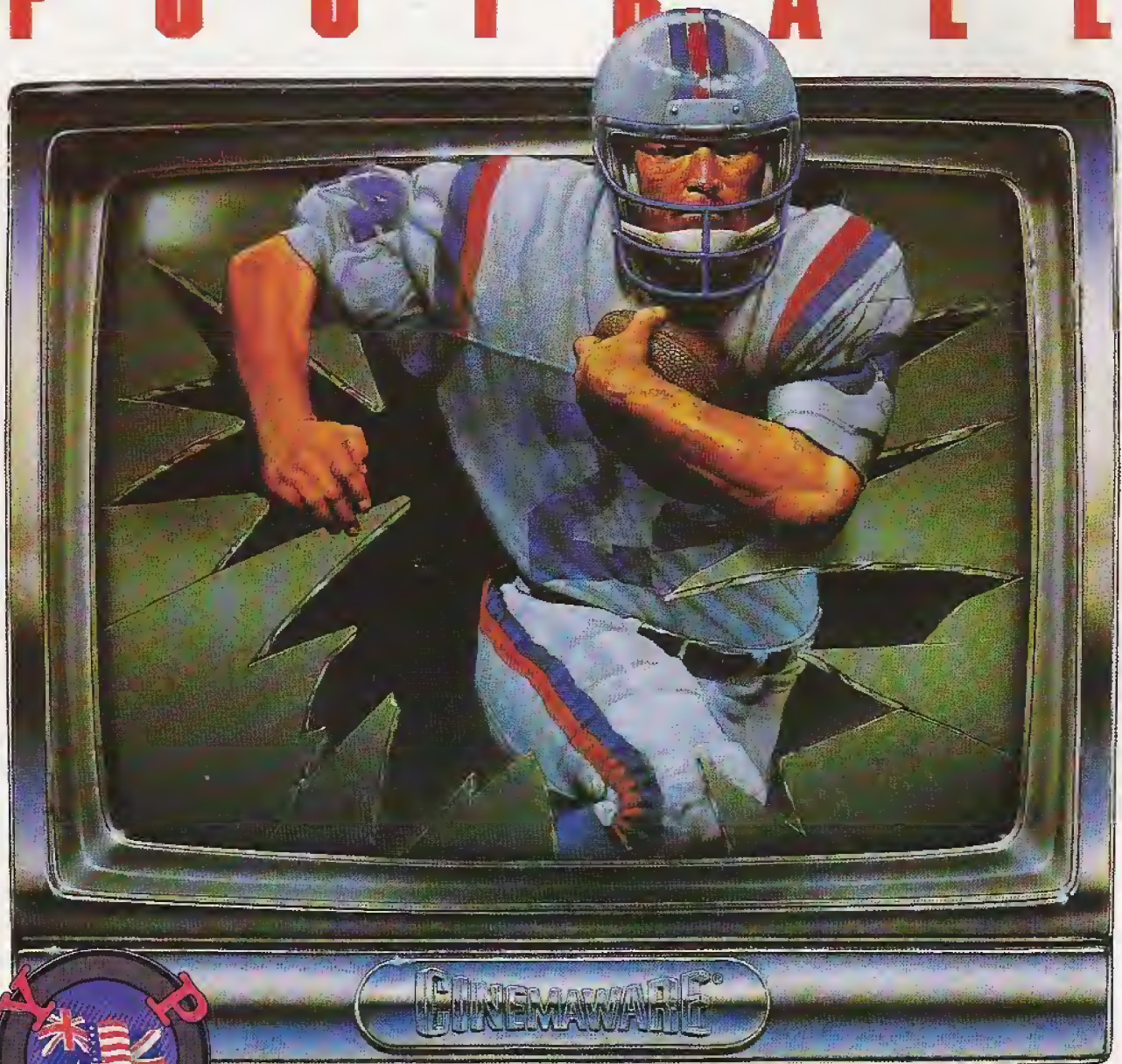
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